

=> d his

(FILE 'HOME' ENTERED AT 14:02:28 ON 08 JUN 2005)

L1 FILE 'HCAPLUS' ENTERED AT 14:04:05 ON 08 JUN 2005  
1 US20040167356/PN OR (JP2003-386479# OR JP2003-46331#)/AP,PRN

FILE 'REGISTRY' ENTERED AT 14:04:08 ON 08 JUN 2005

L2 FILE 'HCAPLUS' ENTERED AT 14:04:10 ON 08 JUN 2005  
TRA L1 1- RN : 18 TERMS

L3 FILE 'REGISTRY' ENTERED AT 14:04:10 ON 08 JUN 2005  
18 SEA L2

L4 FILE 'WPIX' ENTERED AT 14:04:11 ON 08 JUN 2005  
1 US20040167356/PN OR (JP2003-386479# OR JP2003-46331#)/AP,PRN

=> b hcap

FILE 'HCAPLUS' ENTERED AT 14:04:42 ON 08 JUN 2005  
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FILE COVERS 1907 - 8 Jun 2005 VOL 142 ISS 24  
FILE LAST UPDATED: 7 Jun 2005 (20050607/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d iall ll tot

L1 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2004:700284 HCAPLUS  
DOCUMENT NUMBER: 141:207379  
ENTRY DATE: Entered STN: 27 Aug 2004  
TITLE: Asymmetric phosphinoselenoic chloride and method for  
producing the same  
INVENTOR(S): Murai, Toshiaki; Kimura, Tsutomu  
PATENT ASSIGNEE(S): President of Gifu University, Japan  
SOURCE: Eur. Pat. Appl., 10 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
INT. PATENT CLASSIF.:  
MAIN: C07F009-00  
CLASSIFICATION: 29-7 (Organometallic and Organometalloidal Compounds)  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1449845	A2	20040825	EP 2004-3888	20040220 <--

Search done by Noble Jarrell

EP 1449845 A3 20040908  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK  
 JP 2004277408 A2 20041007 JP 2003-386479 20031117 <--  
 US 2004167356 A1 20040826 US 2004-785517 20040224 <--  
 PRIORITY APPLN. INFO.: JP 2003-46331 A 20030224 <--  
 JP 2003-386479 A 20031117 <--

## PATENT CLASSIFICATION CODES:

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 1449845	ICM	C07F009-00
JP 2004277408	FTerm	4H050/AA02; 4H050/AB84; 4H050/BE90; 4H050/WA15; 4H050/WA26; 4H050/WA29
US 2004167356	NCL	562/808.000

OTHER SOURCE(S): CASREACT 141:207379; MARPAT 141:207379

## ABSTRACT:

The preparation of asym. phosphinoselenoic chlorides, ArP(:Se)(Cl)(R) (Ar = aryl group, R = aryl group, alkyl group having 3 or more carbon atoms, or alkoxy group) via reaction of ArPCl<sub>2</sub> with Grignard or lithium reagent in presence of Se in THF is described. The asym. phosphinoselenoic chloride is a novel compound and is useful as synthetic raw materials, agricultural chems., pharmaceutical products and the like. Thus, reaction of PhPCl<sub>2</sub> with isopropylmagnesium chloride in presence of Se in THF gave 91% PhP(:Se)(Cl)(CHMe<sub>2</sub>).

SUPPL. TERM: asym phosphinoselenoic chloride prepn; dihalophenylphosphine alkylation Grignard lithium reagent

INDEX TERM: Alkylation  
 Grignard reaction  
 (preparation of asym. phosphinoselenoic chloride via alkylation of dihalophenylphosphine with Grignard or alkyl lithium reagent)

INDEX TERM: 644-97-3, Dichlorophenylphosphine 677-22-5,  
 tert-Butylmagnesium chloride 873-77-8,  
 4-Chlorophenylmagnesium bromide 931-51-1,  
 Cyclohexylmagnesium chloride 1068-55-9, Isopropylmagnesium  
 chloride 2216-51-5, (-)-Menthol 7782-49-2, Selenium,  
 reactions 15366-08-2, sec-Butylmagnesium chloride  
 16750-63-3, 2-Methoxyphenylmagnesium bromide

ROLE: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of asym. phosphinoselenoic chloride via alkylation of dihalophenylphosphine with Grignard or alkyl lithium reagent)

INDEX TERM: 146880-01-5P 742060-18-0P 742060-19-1P 742060-20-4P  
 742060-21-5P 742060-22-6P 742060-23-7P

ROLE: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of asym. phosphinoselenoic chloride via alkylation of dihalophenylphosphine with Grignard or alkyl lithium reagent)

INDEX TERM: 108-88-3, Toluene, uses 109-99-9, THF, uses  
 ROLE: NUU (Other use, unclassified); USES (Uses)  
 (solvent; preparation of asym. phosphinoselenoic chloride via alkylation of dihalophenylphosphine with Grignard or alkyl lithium reagent)

=> b reg

FILE 'REGISTRY' ENTERED AT 14:04:48 ON 08 JUN 2005

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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 7 JUN 2005 HIGHEST RN 851848-50-5

DICTIONARY FILE UPDATES: 7 JUN 2005 HIGHEST RN 851848-50-5

Search done by Noble Jarrell

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 18, 2005

Please note that search-term pricing does apply when conducting SmartSELECT searches.

```
*****
*
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added, *
* effective March 20, 2005. A new display format, IDERL, is now *
* available and contains the CA role and document type information. *
*
*****
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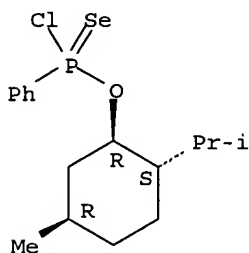
Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more information enter HELP PROP at an arrow prompt in the file or refer to the file summary sheet on the web at:  
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> d ide l3 tot

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L3  ANSWER 1 OF 18  REGISTRY  COPYRIGHT 2005 ACS on STN
RN   742060-23-7  REGISTRY
ED   Entered STN:  10 Sep 2004
CN   Phosphonochloridoselenoic acid, phenyl-, O-[(1R,2S,5R)-5-methyl-2-(1-
      methylethyl)cyclohexyl] ester (9CI)  (CA INDEX NAME)
FS   STEREOSEARCH
MF   C16 H24 Cl O P Se
SR   CA
LC   STN Files:   CA, CAPLUS, CASREACT, USPATFULL
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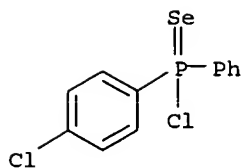
Absolute stereochemistry.



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

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1 REFERENCES IN FILE CA (1907 TO DATE)
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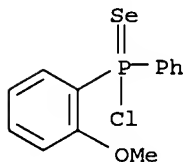
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L3  ANSWER 2 OF 18  REGISTRY  COPYRIGHT 2005 ACS on STN
RN   742060-22-6  REGISTRY
ED   Entered STN:  10 Sep 2004
CN   Phosphinoselenoic chloride, (4-chlorophenyl)phenyl- (9CI)  (CA INDEX NAME)
MF   C12 H9 Cl2 P Se
SR   CA
LC   STN Files:   CA, CAPLUS, CASREACT, USPATFULL
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3 REFERENCES IN FILE CAPLUS (1907 TO DATE)

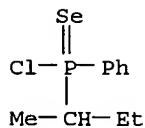
L3 ANSWER 3 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
RN 742060-21-5 REGISTRY  
ED Entered STN: 10 Sep 2004  
CN Phosphinoselenoic chloride, (2-methoxyphenyl)phenyl- (9CI) (CA INDEX NAME)  
MF Cl3 H12 Cl O P Se  
SR CA  
LC STN Files: CA, CAPLUS, CASREACT, USPATFULL



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

3 REFERENCES IN FILE CA (1907 TO DATE)  
3 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 4 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
RN 742060-20-4 REGISTRY  
ED Entered STN: 10 Sep 2004  
CN Phosphinoselenoic chloride, (1-methylpropyl)phenyl- (9CI) (CA INDEX NAME)  
MF Cl10 H14 Cl P Se  
SR CA  
LC STN Files: CA, CAPLUS, CASREACT, USPATFULL

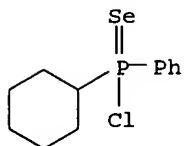


\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

2 REFERENCES IN FILE CA (1907 TO DATE)  
2 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 5 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
RN 742060-19-1 REGISTRY  
ED Entered STN: 10 Sep 2004  
CN Phosphinoselenoic chloride, cyclohexylphenyl- (9CI) (CA INDEX NAME)

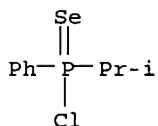
MF C12 H16 Cl P Se  
 SR CA  
 LC STN Files: CA, CAPLUS, CASREACT, USPATFULL



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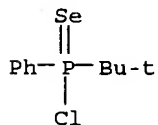
L3 ANSWER 6 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
 RN 742060-18-0 REGISTRY  
 ED Entered STN: 10 Sep 2004  
 CN Phosphinoselenoic chloride, (1-methylethyl)phenyl- (9CI) (CA INDEX NAME)  
 MF C9 H12 Cl P Se  
 SR CA  
 LC STN Files: CA, CAPLUS, CASREACT, USPATFULL



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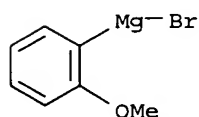
L3 ANSWER 7 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
 RN 146880-01-5 REGISTRY  
 ED Entered STN: 08 Apr 1993  
 CN Phosphinoselenoic chloride, (1,1-dimethylethyl)phenyl- (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Phosphinoselenoic chloride, (1,1-dimethylethyl)phenyl-, (+)-  
 MF C10 H14 Cl P Se  
 SR CA  
 LC STN Files: CA, CAPLUS, CASREACT, USPATFULL



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

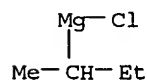
4 REFERENCES IN FILE CA (1907 TO DATE)  
 4 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 8 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
 RN 16750-63-3 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Magnesium, bromo(2-methoxyphenyl)- (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN (o-Methoxyphenyl)magnesium bromide (6CI)  
 CN Magnesium, bromo(o-methoxyphenyl)- (7CI, 8CI)  
 OTHER NAMES:  
 CN (2-Methoxyphenyl)magnesium bromide  
 CN (o-Anisyl)bromomagnesium  
 CN Bromo(2-methoxyphenyl)magnesium  
 CN Bromo(o-methoxyphenyl)magnesium  
 CN o-Anisylmagnesium bromide  
 MF C7 H7 Br Mg O  
 LC STN Files: BEILSTEIN\*, CA, CAOLD, CAPLUS, CASREACT, CHEMCATS,  
 CHEMINFORMRX, CSCHM, GMELIN\*, TOXCENTER, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)



207 REFERENCES IN FILE CA (1907 TO DATE)  
 210 REFERENCES IN FILE CAPLUS (1907 TO DATE)  
 4 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L3 ANSWER 9 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
 RN 15366-08-2 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Magnesium, chloro(1-methylpropyl)- (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Magnesium, sec-butylchloro- (7CI, 8CI)  
 OTHER NAMES:  
 CN 2-Butylmagnesium chloride  
 CN sec-Butylmagnesium chloride  
 DR 79722-38-6  
 MF C4 H9 Cl Mg  
 LC STN Files: BEILSTEIN\*, CA, CAOLD, CAPLUS, CASREACT, CHEMCATS,  
 CHEMINFORMRX, CHEMLIST, CSCHM, GMELIN\*, IFICDB, IFIPAT, IFIUDB,  
 TOXCENTER, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: EINECS\*\*, NDSL\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



131 REFERENCES IN FILE CA (1907 TO DATE)  
 2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 132 REFERENCES IN FILE CAPLUS (1907 TO DATE)  
 1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L3 ANSWER 10 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
 RN 7782-49-2 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Selenium (8CI, 9CI) (CA INDEX NAME)  
 OTHER NAMES:  
 CN C.I. 77805  
 DR 12640-29-8, 12640-30-1, 12641-96-2, 12733-65-2, 11125-23-8, 11133-88-3,

95788-45-7, 50954-17-1, 51882-60-1, 37256-19-2, 37258-85-8, 37276-15-6,  
37368-02-8

MF Se  
CI COM

LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, AQUIRE, BIOBUSINESS, BIOSIS,  
BIOTECHNO, CA, CABA, CANCERLIT, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS,  
CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM\*,  
DIOGENES, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2,  
HSDB\*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK\*, MSDS-OHS, NAPRALERT,  
NIOSHTIC, PIRA, PROMT, RTECS\*, TOXCENTER, TULSA, ULIDAT, USPAT2,  
USPATFULL, VETU, VTB

(\*File contains numerically searchable property data)

Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

Se

\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

61941 REFERENCES IN FILE CA (1907 TO DATE)  
2340 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
62007 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L3 ANSWER 11 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
RN 2216-51-5 REGISTRY  
ED Entered STN: 16 Nov 1984  
CN Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1R,2S,5R)- (9CI) (CA INDEX  
NAME)

OTHER CA INDEX NAMES:

CN Cyclohexanol, 5-methyl-2-(1-methylethyl)-, [1R-  
(1 $\alpha$ ,2 $\beta$ ,5 $\alpha$ )]-

CN Menthol, (1R,3R,4S)-(-)- (8CI)

OTHER NAMES:

CN (-)-Menthol

CN (-)-Menthyl alcohol

CN (-)-trans-p-Methan-cis-3-ol

CN (1R)-(-)-Menthol

CN (1R,2S,5R)-(-)-Menthol

CN (R)-(-)-Menthol

CN 1R-Menthol

CN 1-(-)-Menthol

CN 1-Menthol

CN Levomenthol

CN NSC 62788

FS STEREOSEARCH

DR 98167-53-4

MF C10 H20 O

CI COM

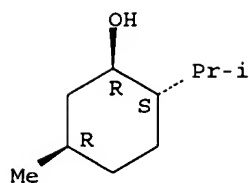
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN\*, BIOBUSINESS,  
BIOSIS, CA, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX,  
CHEMLIST, CIN, CSCHEM, DETHERM\*, DIOGENES, DIPPR\*, GMELIN\*, HODOC\*,  
HSDB\*, IFICDB, IFIPAT, IFIUDB, IPA, MSDS-OHS, NAPRALERT, PROMT, PS,  
RTECS\*, SPECINFO, TOXCENTER, USAN, USPAT2, USPATFULL

(\*File contains numerically searchable property data)

Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

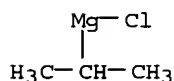
Absolute stereochemistry. Rotation (-).



**\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\***

3088 REFERENCES IN FILE CA (1907 TO DATE)  
 43 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 3097 REFERENCES IN FILE CAPLUS (1907 TO DATE)

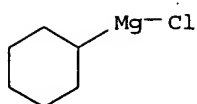
L3 ANSWER 12 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
 RN 1068-55-9 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Magnesium, chloro(1-methylethyl)- (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Isopropylmagnesium chloride (6CI)  
 CN Magnesium, chloroisopropyl- (7CI, 8CI)  
 OTHER NAMES:  
 CN 2-Propylmagnesium chloride  
 CN Chloroisopropylmagnesium  
 MF C3 H7 Cl Mg  
 LC STN Files: BEILSTEIN\*, BIOSIS, CA, CAOLD, CAPLUS, CASREACT, CHEMCATS,  
 CHEMINFORMRX, CHEMLIST, CSChem, GMELIN\*, IFICDB, IFIPAT, IFIUDB,  
 MSDS-OHS, TOXCENTER, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: EINECS\*\*, NDSL\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



955 REFERENCES IN FILE CA (1907 TO DATE)  
 7 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 961 REFERENCES IN FILE CAPLUS (1907 TO DATE)  
 11 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

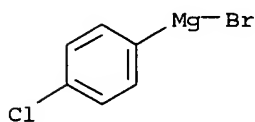
L3 ANSWER 13 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
 RN 931-51-1 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Magnesium, chlorocyclohexyl- (7CI, 8CI, 9CI) (CA INDEX NAME)  
 OTHER NAMES:  
 CN Chlorocyclohexylmagnesium  
 CN Cyclohexylmagnesium chloride  
 MF C6 H11 Cl Mg  
 LC STN Files: BEILSTEIN\*, BIOSIS, CA, CAOLD, CAPLUS, CASREACT, CHEMCATS,  
 CHEMINFORMRX, CHEMLIST, CSChem, GMELIN\*, HSDB\*, IFICDB, IFIPAT, IFIUDB,  
 MSDS-OHS, TOXCENTER, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: EINECS\*\*, NDSL\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)





367 REFERENCES IN FILE CA (1907 TO DATE)  
 2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 367 REFERENCES IN FILE CAPLUS (1907 TO DATE)  
 7 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L3 ANSWER 14 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
 RN 873-77-8 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Magnesium, bromo(4-chlorophenyl)- (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Magnesium, bromo(p-chlorophenyl)- (8CI)  
 CN p-Chlorophenylmagnesium bromide (6CI)  
 OTHER NAMES:  
 CN (4-Chlorophenyl)magnesium bromide  
 CN Bromo(4-chlorophenyl)magnesium  
 MF C6 H4 Br Cl Mg  
 LC STN Files: BEILSTEIN\*, CA, CAOLD, CAPLUS, CASREACT, CHEMCATS,  
 CHEMINFORMRX, CHEMLIST, CSChem, GMELIN\*, IFICDB, IFIPAT, IFIUDb, PS,  
 TOXCENTER, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: EINECS\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



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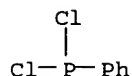
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 349 REFERENCES IN FILE CAPLUS (1907 TO DATE)  
 4 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L3 ANSWER 15 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
 RN 677-22-5 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Magnesium, chloro(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Magnesium, tert-butylchloro- (7CI, 8CI)  
 CN tert-Butylmagnesium chloride (6CI)  
 OTHER NAMES:  
 CN (1,1-Dimethylethyl)magnesium chloride  
 CN t-Butylmagnesium chloride  
 CN tert-Butylchloromagnesium  
 DR 13264-19-2, 23151-51-1  
 MF C4 H9 Cl Mg  
 LC STN Files: BEILSTEIN\*, CA, CAOLD, CAPLUS, CASREACT, CHEMCATS,  
 CHEMINFORMRX, CHEMLIST, CSChem, GMELIN\*, IFICDB, IFIPAT, IFIUDb, PS,  
 SYNTHLINE, TOXCENTER, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: EINECS\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)

t-Bu-Mg-Cl

752 REFERENCES IN FILE CA (1907 TO DATE)  
 8 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 755 REFERENCES IN FILE CAPLUS (1907 TO DATE)  
 18 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L3 ANSWER 16 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
 RN 644-97-3 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Phosphonous dichloride, phenyl- (6CI, 8CI, 9CI) (CA INDEX NAME)  
 OTHER NAMES:  
 CN Dichlorophenylphosphine  
 CN NSC 66478  
 CN Phenyl phosphorus dichloride  
 CN Phenylidichlorophosphine  
 CN Phenylphosphine dichloride  
 CN Phenylphosphinous dichloride  
 CN Phenylphosphonous acid dichloride  
 CN Phenylphosphonous dichloride  
 CN Phosphine, dichlorophenyl-  
 FS 3D CONCORD  
 MF C6 H5 Cl2 P  
 CI COM  
 LC STN Files: BEILSTEIN\*, BIOSIS, CA, CAOLD, CAPLUS, CASREACT, CHEMCATS,  
 CHEMINFORMRX, CHEMLIST, CSChem, DETHERM\*, GMELIN\*, HODOC\*, HSDB\*,  
 IFICDB, IFIPAT, IFIUDB, MSDS-OHS, RTECS\*, SPECINFO, TOXCENTER, USPAT2,  
 USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: EINECS\*\*, NDSL\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

1724 REFERENCES IN FILE CA (1907 TO DATE)  
 29 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 1725 REFERENCES IN FILE CAPLUS (1907 TO DATE)  
 52 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L3 ANSWER 17 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
 RN 109-99-9 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)  
 OTHER NAMES:  
 CN Butane  $\alpha,\delta$ -oxide  
 CN Butane, 1,4-epoxy-  
 CN Cyclotetramethylene oxide  
 CN Furanidine  
 CN NSC 57858  
 CN Oxacyclopentane  
 CN Oxolane  
 CN Tetrahydrofuran  
 CN Tetramethylene oxide  
 CN THF  
 FS 3D CONCORD  
 DR 77392-70-2  
 MF C4 H8 O

Search done by Noble Jarrell

CI COM  
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN\*, BIOBUSINESS,  
BIOSIS, BIOTECHNO, CA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN,  
CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU,  
DETERM\*, DIPPR\*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT,  
ENCOMPPAT2, GMELIN\*, HODOC\*, HSDB\*, IFICDB, IFIPAT, IFIUDB, IPA,  
MEDLINE, MRCK\*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM\*, PIRA, PROMT,  
RTECS\*, SPECINFO, SYNTHLINE, TOXCENTER, TULSA, ULIDAT, USPAT2,  
USPATFULL, VETU, VTB  
(\*File contains numerically searchable property data)  
Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
(\*\*Enter CHEMLIST File for up-to-date regulatory information)

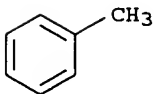


\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

22433 REFERENCES IN FILE CA (1907 TO DATE)  
813 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
22489 REFERENCES IN FILE CAPLUS (1907 TO DATE)  
1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L3 ANSWER 18 OF 18 REGISTRY COPYRIGHT 2005 ACS on STN  
RN 108-88-3 REGISTRY  
ED Entered STN: 16 Nov 1984  
CN Benzene, methyl- (9CI) (CA INDEX NAME)  
OTHER CA INDEX NAMES:  
CN Toluene (8CI)  
OTHER NAMES:  
CN 1-Methylbenzene  
CN Antisal 1a  
CN CP 25  
CN CP 25 (solvent)  
CN Methacide  
CN Methylbenzene  
CN Methylbenzol  
CN NSC 406333  
CN Phenylmethane  
CN Toluol  
FS 3D CONCORD  
MF C7 H8  
CI COM

LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN\*, BIOBUSINESS,  
BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB,  
CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB,  
DDFU, DETERM\*, DIOGENES, DIPPR\*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2,  
ENCOMPPAT, ENCOMPPAT2, GMELIN\*, HODOC\*, HSDB\*, IFICDB, IFIPAT, IFIUDB,  
IPA, MEDLINE, MRCK\*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM\*, PIRA,  
PROMT, PS, RTECS\*, SPECINFO, SYNTHLINE, TOXCENTER, TULSA, ULIDAT,  
USPAT2, USPATFULL, VETU, VTB  
(\*File contains numerically searchable property data)  
Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
(\*\*Enter CHEMLIST File for up-to-date regulatory information)



## \*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

81358 REFERENCES IN FILE CA (1907 TO DATE)  
 918 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 81480 REFERENCES IN FILE CAPLUS (1907 TO DATE)  
 24 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=&gt; b wpix

FILE 'WPIX' ENTERED AT 14:04:59 ON 08 JUN 2005  
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FILE LAST UPDATED: 3 JUN 2005 <20050603/UP>  
 MOST RECENT DERWENT UPDATE: 200535 <200535/DW>  
 DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

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 PLEASE VISIT:  
[http://www.stn-international.de/training\\_center/patents/stn\\_guide.pdf](http://www.stn-international.de/training_center/patents/stn_guide.pdf) <<<

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>>> THE CPI AND EPI MANUAL CODES HAVE BEEN REVISED FROM UPDATE 200501.  
 PLEASE CHECK:  
<http://thomsonderwent.com/support/dwpiref/reftools/classification/code-revision/>  
 FOR DETAILS. <<<

=&gt; d iall 14 tot

L4 ANSWER 1 OF 1 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

ACCESSION NUMBER: 2004-617632 [60] WPIX

DOC. NO. CPI: C2004-222359

TITLE: New asymmetric phosphinoselenoic chloride useful as  
 sensitizer, as raw material for synthesis of various  
 compounds, for agricultural chemicals and pharmaceutical  
 products.

DERWENT CLASS: B05 C01 E11

INVENTOR(S): KIMURA, T; MURAI, T

PATENT ASSIGNEE(S): (UYGI-N) UNIV GIFU; (KOKU-N) KOKURITSU DAIGAKU HOJIN GIFU  
 DAIGAKU

COUNTRY COUNT: 33

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN	IPC
EP 1449845	A2	20040825	(200460)*	EN	10	C07F009-00	
R: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LT LU LV							
MC MK NL PT RO SE SI SK TR							
US 2004167356	A1	20040826	(200460)			C07F009-02<--	
JP 2004277408	A	20041007	(200466)		13	C07F009-50	

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
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EP 1449845      A2      EP 2004-3888      20040220  
US 2004167356   A1      US 2004-785517     20040224  
JP 2004277408   A       JP 2003-386479     20031117    <--
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PRIORITY APPLN. INFO: JP 2003-386479  
20031117; JP 2003-46331  
20030224

INT. PATENT CLASSIF.:  
MAIN: C07F009-00; C07F009-02; C07F009-50

## BASIC ABSTRACT:

EP 1449845 A UPAB: 20040920

NOVELTY - Asymmetric phosphinoselenoic chloride is new.

DETAILED DESCRIPTION - Asymmetric phosphinoselenoic chloride of  
formula Ar-P(=Se)(Cl)-R (I) is new.

Ar = aryl; and

R = aryl, alkyl having at least 3C or alkoxy.

An INDEPENDENT CLAIM is included for preparation of (I).

USE - As a sensitizer; as raw material for synthesis of various  
compounds; for agricultural chemicals and pharmaceutical products.

ADVANTAGE - The asymmetric phosphinoselenoic chloride has excellent  
stability in air and with physiological activity and thus can be used for  
agricultural chemicals and pharmaceutical products. Preparation of  
asymmetric phosphinoselenoic chloride does not require catalyst and is  
produced easily and at high yield and selectivity by merely mixing the  
reactants. The solvent such as THF or toluene does not inhibit the  
reactions.

Dwg.0/0

FILE SEGMENT: CPI

FIELD AVAILABILITY: AB; DCN

MANUAL CODES: CPI: B05-B01D; C05-B01D; E05-G03A

=> b home

FILE 'HOME' ENTERED AT 14:05:07 ON 08 JUN 2005

=>

=> d his

(FILE 'HOME' ENTERED AT 14:02:28 ON 08 JUN 2005)

FILE 'HCAPLUS' ENTERED AT 14:04:05 ON 08 JUN 2005

L1 1 US20040167356/PN OR (JP2003-386479# OR JP2003-46331#)/AP,PRN

FILE 'REGISTRY' ENTERED AT 14:04:08 ON 08 JUN 2005

L2 FILE 'HCAPLUS' ENTERED AT 14:04:10 ON 08 JUN 2005  
TRA L1 1- RN : 18 TERMS

L3 FILE 'REGISTRY' ENTERED AT 14:04:10 ON 08 JUN 2005  
18 SEA L2

L4 FILE 'WPIX' ENTERED AT 14:04:11 ON 08 JUN 2005  
1 US20040167356/PN OR (JP2003-386479# OR JP2003-46331#)/AP,PRN

L5 FILE 'REGISTRY' ENTERED AT 14:11:29 ON 08 JUN 2005  
STR  
L6 0 L5  
L7 14 L5 FULL  
SAV TEM L7 NWA0517F0/A

L8 FILE 'HCAPLUS' ENTERED AT 14:15:09 ON 08 JUN 2005  
28 L7  
L9 10 L7 (L) PREP+NT/RL

L10 FILE 'HCAOLD' ENTERED AT 14:16:52 ON 08 JUN 2005  
1 L7  
SEL AN  
EDIT E1 /AN /OREF

FILE 'HCAPLUS' ENTERED AT 14:17:11 ON 08 JUN 2005  
L11 2 E1  
L12 28 L8 OR L11  
L13 18 L12 NOT L9  
E MURAI T/AU  
L14 74 E3  
E MURAI TOSHIAKI/AU  
L15 141 E3  
E KIMURA T.AU  
E KIMURA T/AU  
L16 1055 E3-6  
E KIMURA TSUTOMO/AU  
L17 108 E3-4  
L18 16682 GIFU/CS,PA  
L19 4 (L9 OR L13) AND L14-18  
L20 24 (L9 OR L13) NOT L19  
L21 6 L20 AND L9  
L22 18 L20 NOT L21

=> b reg

FILE 'REGISTRY' ENTERED AT 14:22:36 ON 08 JUN 2005

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

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Property values tagged with IC are from the ZIC/VINITI data file  
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STRUCTURE FILE UPDATES: 7 JUN 2005 HIGHEST RN 851848-50-5

DICTIONARY FILE UPDATES: 7 JUN 2005 HIGHEST RN 851848-50-5

New CAS Information Use Policies, enter HELP USAGETERMS for details.

Search done by Noble Jarrell

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 18, 2005

Please note that search-term pricing does apply when conducting SmartSELECT searches.

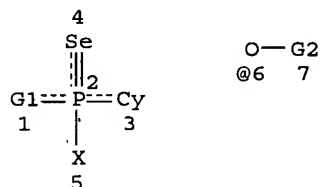
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*****
*
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added,   *
* effective March 20, 2005. A new display format, IDERL, is now    *
* available and contains the CA role and document type information. *
*
*****
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Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more information enter HELP PROP at an arrow prompt in the file or refer to the file summary sheet on the web at:  
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> d que sta l7

L5 STR



VAR G1=AK/CY/6/OH

VAR G2=AK/CY

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE

L7 14 SEA FILE=REGISTRY SSS FUL L5

100.0% PROCESSED 376 ITERATIONS

14 ANSWERS

SEARCH TIME: 00.00.01

=> b hcap

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FILE COVERS 1907 - 8 Jun 2005 VOL 142 ISS 24  
FILE LAST UPDATED: 7 Jun 2005 (20050607/ED)

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This file contains CAS Registry Numbers for easy and accurate  
substance identification.

=> d all fhistr l19 tot

L19 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2005 ACS on STN  
AN 2005:8873 HCAPLUS  
DN 142:240513  
ED Entered STN: 06 Jan 2005  
TI P-Chiral Phosphinoselenoic Chlorides and Phosphinochalcogenoselenoic Acid  
Esters: Synthesis, Characterization, and Conformational Studies  
AU Kimura, Tsutomu; Murai, Toshiaki  
CS Department of Chemistry, Faculty of Engineering, Gifu  
University, Gifu, 501-1193, Japan  
SO Journal of Organic Chemistry (2005), 70(3), 952-959  
CODEN: JOCEAH; ISSN: 0022-3263  
PB American Chemical Society  
DT Journal  
LA English  
CC 29-7 (Organometallic and Organometalloidal Compounds)  
Section cross-reference(s): 22, 75  
AB Phosphinoselenoic chlorides bearing two different organic substituents at  
phosphorus were prepared by partial alkylation or arylation of  
phenyldichlorophosphine in the presence of elemental selenium;  
phosphinoselenoic esters, thio- and selenoesters were also prepared  
Alkylation of  $\text{PhPCl}_2$  by  $\text{RMgX}$  in the presence of Se afforded  $\text{PhRP(Se)Cl}$   
(1a-g; R = iPr, cyclohexyl, s-Bu, tBu, 2-MeOC<sub>6</sub>H<sub>4</sub>, 4-MeC<sub>6</sub>H<sub>4</sub>, 4-ClC<sub>6</sub>H<sub>4</sub>).  
Alkylation of  $\text{PCl}_3$  subsequent treatment with tBuMgCl and  $\text{R}_1\text{MgX}$  in the  
presence of Se gave dialkyl derivs.  $\text{tBuR}_1\text{P(Se)Cl}$  (1h,i; R = iPr,  
cyclohexyl). The structure of the chloride 1b (R = Cy) was determined by x-ray  
crystallog. Reaction of 1a,b,d with nucleophiles  $\text{R}_2\text{EM}$  (E = O, S, Se; M =  
Na, Li) afforded esters  $\text{PhRP(Se)(OR}_2\text{)}$  (2a,b; R = Cy, tBu;  $\text{R}_2$  = Et),  
thioesters  $\text{PhRP(Se)(SR}_2\text{)}$  (3a-d; R = tBu, iPr;  $\text{R}_2$  = Bu, Ph,  $\text{Me}_3\text{SiCH}_2\text{CH}_2$ )  
and selenoesters  $\text{PhRP(Se)(SeR}_2\text{)}$  (4a-c; R = tBu,  $\text{R}_2$  = Bu, tBu, Ph).  
Selenoesters  $\text{PhRP(E)SeR}_2$  (8, 9; E = O, S;  $\text{R}_2$  = Me, Et, Bu) were prepared by  
reaction of 1a-d with NaOH and  $\text{Na}_2\text{S}$  with subsequent treatment of the  
sodium salt with  $\text{R}_2\text{I}$ . Crystal structure determination for esters showed that they  
adopted gauche conformations. The computational results supported the  
observed conformational preference. Natural bond orbital analyses of the  
model compds. showed that two types of nonbonding orbital interactions,  
 $\text{nE}' \rightarrow \sigma^*\text{P=E}$  and  $\text{nE} \rightarrow \sigma^*\text{P-E}'$ , are important in  
these compds. Linear correlations were observed between the exptl.  $^{77}\text{Se}$  NMR  
chemical shifts or the coupling consts. of P-Se bonds in the esters and the  
calculated P-Se bond lengths of the model compds.  
ST phosphorus unsym phosphinoselenoic chloride ester prepn alkylation  
arylation dichlorophenylphosphine; alkylation phosphorus trichloride unsym  
dialkylphosphinoselenoic chloride ester prepn; ester phosphorus acid  
phosphinoselenoic chiral racemic chloride prepn; crystal structure phenyl  
cyclohexyl butyl trimethylsilylethyl phosphinoselenoic chloride ester; mol  
structure phenyl cyclohexyl butyl trimethylsilylethyl phosphinoselenoic  
chloride ester  
IT Density functional theory  
(B3LYP; DFT B3LYP geometry, conformational energy and natural bond  
orbital anal. of phosphinoselenoic esters, thio- and selenoesters)  
IT Conformation  
Natural bond orbital  
(DFT B3LYP geometry, conformational energy and natural bond orbital  
anal. of phosphinoselenoic esters, thio- and selenoesters)  
IT NMR (nuclear magnetic resonance)  
(chemical shift, selenium-77; linear correlation of selenium-77 NMR chemical



- shift and phosphorus-selenium bond length for phosphinoselenoic esters, thio- and selenoesters)
- IT Phosphorus acids  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(esters; preparation of esters, thio- and selenoesters of unsym. alkyl-aryl phosphinoselenoic acids)
- IT Linear free energy relationship  
(linear correlation of selenium-77 NMR chemical shift and phosphorus-selenium bond length for phosphinoselenoic esters, thio- and selenoesters)
- IT Crystal structure  
Molecular structure  
(of unsym. phenyl-alkyl phosphinoselenoic chlorides and thio- and selenoesters)
- IT Phosphorus acids  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(phosphinoselenoic chlorides; preparation of unsym. alkyl-aryl phosphinoselenoic chlorides and nucleophilic substitution to give esters, thio- and selenoesters)
- IT Bond length  
(phosphorus-selenium; DFT B3LYP calcn. of phosphorus-selenium bond length for phosphinoselenoic esters, thio- and selenoesters and linear correlation with selenium-77 NMR chemical shift)
- IT Alkylation  
Arylation  
(preparation of esters, thio- and selenoesters of unsym. alkyl-aryl phosphinoselenoic acids)
- IT Esters, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(selenoesters; preparation of esters, thio- and selenoesters of unsym. alkyl-aryl phosphinoselenoic acids)
- IT Esters, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(thio, phosphinoselenoic; preparation of esters, thio- and selenoesters of unsym. alkyl-aryl phosphinoselenoic acids)
- IT 844701-52-6 844701-53-7 844701-54-8 844701-55-9 844701-56-0  
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); FORM (Formation, nonpreparative); PROC (Process)  
(DFT B3LYP geometry, conformational energy and natural bond orbital anal. of phosphinoselenoic esters, thio- and selenoesters)
- IT 644-97-3, Dichlorophenylphosphine  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(alkylation, arylation; preparation of esters, thio- and selenoesters of unsym. alkyl-aryl phosphinoselenoic acids)
- IT 742060-19-1P  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation)  
; PREP (Preparation); RACT (Reactant or reagent)  
(crystal structure, esterification; preparation of esters, thio- and selenoesters of unsym. alkyl-aryl phosphinoselenoic acids)
- IT 486429-70-3P 844701-49-1P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(crystal structure; preparation of esters, thio- and selenoesters of unsym. alkyl-aryl phosphinoselenoic acids)
- IT 146880-01-5P 742060-18-0P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(esterification; preparation of esters, thio- and selenoesters of unsym. alkyl-aryl phosphinoselenoic acids)
- IT 108-98-5, Benzenethiol, reactions 109-79-5, 1-Butanethiol 18143-30-1, 2-Trimethylsilylethanethiol  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(phosphinylation; preparation of esters, thio- and selenoesters of unsym. alkyl-aryl phosphinoselenoic acids)
- IT 677-22-5, tert-Butylmagnesium chloride 873-77-8, (4-

Chlorophenyl)magnesium bromide 931-51-1, Cyclohexylmagnesium chloride 1068-55-9, Isopropylmagnesium chloride 4294-57-9, (4-Methylphenyl)magnesium bromide 15366-08-2, sec-Butylmagnesium chloride 16750-63-3, (2-Methoxyphenyl)magnesium bromide

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of esters, thio- and selenoesters of unsym. alkyl-aryl phosphinoselenoic acids)

IT 39487-12-2P 113502-18-4P 486429-74-7P 742060-20-4P  
742060-21-5P 742060-22-6P 749255-95-6P  
844701-40-2P 844701-41-3P 844701-42-4P 844701-43-5P  
844701-44-6P 844701-45-7P 844701-46-8P 844701-47-9P 844701-48-0P  
844701-50-4P 844701-51-5P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of esters, thio- and selenoesters of unsym. alkyl-aryl phosphinoselenoic acids)

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Au-Yeung, T; Tetrahedron Lett 2001, V42, P453 HCAPLUS
- (2) Bayandina, E; Zh Obshch Khim 1976, V46, P288 HCAPLUS
- (3) Bayandina, E; Zh Obshch Khim 1978, V48, P2673 HCAPLUS
- (4) Becke, A; J Chem Phys 1993, V98, P5648 HCAPLUS
- (5) Boese, R; Chem -Ztg 1985, V109, P233 HCAPLUS
- (6) Davies, R; Inorg Chem 2002, V41, P348 HCAPLUS
- (7) Frisch, M; Gaussian 98, revision A 7 1998
- (8) Horner, L; Phosphorus Sulfur 1978, V4, P155 HCAPLUS
- (9) Kardanov, N; Izv Akad Nauk SSSR, Ser Khim 1984, V5, P1052
- (10) Kawashima, T; Chem Lett 1989, P849 HCAPLUS
- (11) Kawashima, T; Heteroat Chem 1995, V6, P235 HCAPLUS
- (12) Kimura, T; Chem Lett 2004, P878 HCAPLUS
- (13) Krawiecka, B; Heteroat Chem 1992, V3, P385 HCAPLUS
- (14) Krawiecka, B; J Org Chem 1986, V51, P4201 HCAPLUS
- (15) Kuchen, W; Chem Ber 1966, V99, P1663 HCAPLUS
- (16) Lepicard, G; Acta Crystallogr, Sect B 1969, V25, P617 HCAPLUS
- (17) Murai, T; Chem Lett 2002, P914 HCAPLUS
- (18) Nuretdinov, I; Zh Obshch Khim 1978, V48, P1073 HCAPLUS
- (19) Nuretdinov, I; Zh Obshch Khim 1978, V48, P547 HCAPLUS
- (20) Omelanczuk, J; J Chem Soc, Chem Commun 1994, P2223 HCAPLUS
- (21) Thompson, D; J Org Chem 1988, V53, P2109 HCAPLUS

IT 742060-19-1P

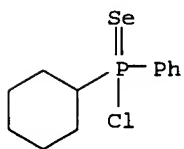
RL: SPN (Synthetic preparation); PREP (Preparation);

PREP (Preparation); PREP (Preparation); RACT (Reactant or reagent)

(crystal structure, esterification; preparation of esters, thio- and selenoesters of unsym. alkyl-aryl phosphinoselenoic acids)

RN 742060-19-1 HCAPLUS

CN Phosphinoselenoic chloride, cyclohexylphenyl- (9CI) (CA INDEX NAME)



L19 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:700284 HCAPLUS

DN 141:207379

ED Entered STN: 27 Aug 2004

TI Asymmetric phosphinoselenoic chloride and method for producing the same

IN Murai, Toshiaki; Kimura, Tsutomu

PA President of Gifu University, Japan

SO Eur. Pat. Appl., 10 pp.

CODEN: EPXXDW

DT Patent  
 LA English  
 IC ICM C07F009-00  
 CC 29-7 (Organometallic and Organometalloidal Compounds)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1449845	A2	20040825	EP 2004-3888	20040220
	EP 1449845	A3	20040908		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2004277408	A2	20041007	JP 2003-386479	20031117
	US 2004167356	A1	20040826	US 2004-785517	20040224
PRAI	JP 2003-46331	A	20030224		
	JP 2003-386479	A	20031117		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 1449845	ICM	C07F009-00
JP 2004277408	FTERM	4H050/AA02; 4H050/AB84; 4H050/BE90; 4H050/WA15; 4H050/WA26; 4H050/WA29
US 2004167356	NCL	562/808.000

OS CASREACT 141:207379; MARPAT 141:207379

AB The preparation of asym. phosphinoselenoic chlorides, ArP(:Se)(Cl)(R) (Ar = aryl group, R = aryl group, alkyl group having 3 or more carbon atoms, or alkoxy group) via reaction of ArPCl<sub>2</sub> with Grignard or lithium reagent in presence of Se in THF is described. The asym. phosphinoselenoic chloride is a novel compound and is useful as synthetic raw materials, agricultural chems., pharmaceutical products and the like. Thus, reaction of PhPCl<sub>2</sub> with isopropylmagnesium chloride in presence of Se in THF gave 91% PhP(:Se)(Cl)(CHMe<sub>2</sub>).

ST asym phosphinoselenoic chloride prepn; dihalophenylphosphine alkylation  
 Grignard lithium reagent

IT Alkylation  
 Grignard reaction

(preparation of asym. phosphinoselenoic chloride via alkylation of dihalophenylphosphine with Grignard or alkyllithium reagent)

IT 644-97-3, Dichlorophenylphosphine 677-22-5, tert-Butylmagnesium chloride 873-77-8, 4-Chlorophenylmagnesium bromide 931-51-1, Cyclohexylmagnesium chloride 1068-55-9, Isopropylmagnesium chloride 2216-51-5, (-)-Menthol 7782-49-2, Selenium, reactions 15366-08-2, sec-Butylmagnesium chloride 16750-63-3, 2-Methoxyphenylmagnesium bromide

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of asym. phosphinoselenoic chloride via alkylation of dihalophenylphosphine with Grignard or alkyllithium reagent)

IT 146880-01-5P 742060-18-0P 742060-19-1P  
 742060-20-4P 742060-21-5P 742060-22-6P  
 742060-23-7P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of asym. phosphinoselenoic chloride via alkylation of dihalophenylphosphine with Grignard or alkyllithium reagent)

IT 108-88-3, Toluene, uses 109-99-9, THF, uses

RL: NUU (Other use, unclassified); USES (Uses)

(solvent; preparation of asym. phosphinoselenoic chloride via alkylation of dihalophenylphosphine with Grignard or alkyllithium reagent)

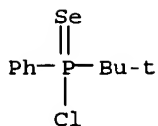
IT 146880-01-5P

RL: SPN (Synthetic preparation); PREP (Preparation)

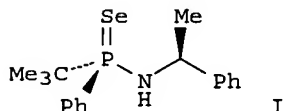
(preparation of asym. phosphinoselenoic chloride via alkylation of dihalophenylphosphine with Grignard or alkyllithium reagent)

RN 146880-01-5 HCAPLUS

CN Phosphinoselenoic chloride, (1,1-dimethylethyl)phenyl- (9CI) (CA INDEX NAME)



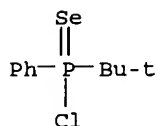
L19 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2004:586266 HCAPLUS  
 DN 141:243633  
 ED Entered STN: 22 Jul 2004  
 TI P-Chiral phosphinoselenoic chlorides and optically active P-chiral phosphinoselenoic amides: Synthesis and stereospecific interconversion with extrusion and addition reactions of the selenium atom  
 AU Kimura, Tsutomu; Murai, Toshiaki  
 CS Department of Chemistry, Faculty of Engineering, Gifu University, Gifu, 501-1193, Japan  
 SO Chemistry Letters (2004), 33(7), 878-879  
 CODEN: CMLTAG; ISSN: 0366-7022  
 PB Chemical Society of Japan  
 DT Journal  
 LA English  
 CC 29-7 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 75  
 OS CASREACT 141:243633  
 GI



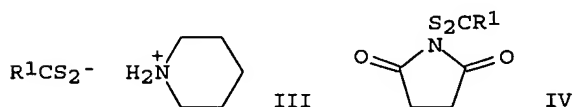
AB An efficient synthesis of P-chiral phosphinoselenoic chlorides and the first optically active P-chiral phosphinoselenoic amides was successfully achieved. E.g., reaction of  $\text{PhPCl}_2$ , Se and  $\text{iPrMgCl/THF}$  at  $0^\circ$  gave P-chiral phosphinoselenoic chlorides,  $\text{PhP(Se)(Cl)(iPr)}$  in 91% yield;  $\text{PhP(Se)(Cl)(tBu)}$  reacted with lithiated (S)-1-phenylethylamine/THF at  $0^\circ$  to give (RP,S)- and (SP,S)- $(\text{tBu})\text{P(Se)(Ph)(NHCHMePh)}$  (I) in 34% and 51% yields, resp. (RP,S)-I was characterized by x-ray crystallog. Stereospecific interconversion with the extrusion of Se atom from optically active phosphinoselenoic amides, e.g., I, and the addition of Se atom to optically active aminophosphines were also studied.  
 ST phosphinoselenoic chloride chiral prepn amidation lithium amide; chiral phosphinoselenoic amide prepn crystal mol structure extrusion selenium  
 IT Phosphines  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (aminophosphines; stereospecific conversion of P-chiral phosphinoselenoic chlorides to optically active P-chiral phosphinoselenoic amides and subsequent extrusion and addition of the selenium atom)  
 IT Crystal structure  
 Molecular structure  
 (of optically active P-chiral phosphinoselenoic amide)  
 IT Amidation  
 (reaction of phosphinoselenoic chlorides with lithium amides to give phosphinoselenoic amides)  
 IT Addition reaction  
 Asymmetric synthesis and induction  
 Extrusion, nonbiological

- (stereospecific conversion of P-chiral phosphinoselenoic chlorides to optically active P-chiral phosphinoselenoic amides and subsequent extrusion and addition of the selenium atom)
- IT Amides, preparation  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(stereospecific conversion of P-chiral phosphinoselenoic chlorides to optically active P-chiral phosphinoselenoic amides and subsequent extrusion and addition of the selenium atom)
- IT 749255-98-9P  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(crystal structure; stereospecific conversion of P-chiral phosphinoselenoic chlorides to optically active P-chiral phosphinoselenoic amides and subsequent extrusion and addition of the selenium atom)
- IT 220812-74-8P 220812-79-3P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and extrusion and addition of the selenium atom of optically active P-chiral phosphinoselenoic amides and subsequent)
- IT 146880-01-5P 742060-18-0P 742060-19-1P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and stereospecific conversion of phosphinoselenoic chlorides to optically active P-chiral phosphinoselenoic amides)
- IT 644-97-3, Phenylldichlorophosphine 677-22-5, tert-Butylmagnesium chloride 696-61-7, p-Methoxyphenylmagnesium chloride 931-51-1, Cyclohexylmagnesium chloride 1068-55-9, Isopropylmagnesium chloride 7782-49-2, Selenium, reactions 51833-36-4, p-Chlorophenylmagnesium chloride 68516-52-9  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of phenylldichlorophosphine, selenium and Grignard reagent to give phosphinoselenoic chlorides and subsequently its phosphinoselenoic amide derivative)
- IT 742060-21-5P 742060-22-6P 749255-95-6P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(reaction of phenylldichlorophosphine, selenium and Grignard reagent to give phosphinoselenoic chlorides and subsequently phosphinoselenoic amide)
- IT 2627-86-3 10420-89-0 17430-98-7 20752-47-0 253430-16-9 749875-36-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of phosphinoselenoic chlorides with lithium amides to give phosphinoselenoic amides)
- IT 749255-96-7P 749255-97-8P 749255-99-0P 749256-00-6P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(stereospecific conversion of P-chiral phosphinoselenoic chlorides to optically active P-chiral phosphinoselenoic amides)
- IT 749256-01-7P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(stereospecific conversion of P-chiral phosphinoselenoic chlorides to optically active P-chiral phosphinoselenoic amides and subsequent extrusion and addition of the selenium atom)
- IT 998-40-3, Tributylphosphine  
RL: RGT (Reagent); RACT (Reactant or reagent)  
(stereospecific interconversion phosphinoselenoic amides with extrusion and addition reactions of the selenium atom)
- RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
- RE
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 (18) Pietrusiewicz, K; Chem Rev 1994, V94, P1375 HCAPLUS  
 (19) Shi, M; Tetrahedron: Asymmetry 2000, V11, P835 HCAPLUS  
 IT 146880-01-5P  
 RL: SPN (Synthetic preparation); PREP (Preparation);  
 PREP (Preparation); RACT (Reactant or reagent)  
 (preparation and stereospecific conversion of phosphinoselenoic chlorides to  
 optically active P-chiral phosphinoselenoic amides)  
 RN 146880-01-5 HCAPLUS  
 CN Phosphinoselenoic chloride, (1,1-dimethylethyl)phenyl- (9CI) (CA INDEX  
 NAME)



- L19 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1985:454162 HCAPLUS  
 DN 103:54162  
 ED Entered STN: 24 Aug 1985  
 TI Preparation and some reactions of thioacyl diphenylthiophosphinoyl and  
 thioacyl diphenylphosphino sulfides  
 AU Kato, Shinzi; Goto, Masahisa; Hattori, Rikizoh; Nishiwaki, Kohichi;  
 Mizuta, Masateru; Ishida, Masaru  
 CS Fac. Eng., Gifu Univ., Yanagido, 501-11, Japan  
 SO Chemische Berichte (1985), 118(4), 1668-83  
 CODEN: CHBEAM; ISSN: 0009-2940  
 DT Journal  
 LA English  
 CC 29-7 (Organometallic and Organometalloidal Compounds)  
 OS CASREACT 103:54162  
 GI



- AB RCS2P(X)Ph2 (I; R = Ph, 4-tolyl, 4-MeOC6H4, mesityl, 1-naphthyl; X = S, Se) were prepared in 45-80% yields by treating RCS2M (M = Na, Cs, Li) with Ph2P(X)Cl. I are useful thioacylating agents under mild conditions. R1CS2PPh2 (II; R1 = Et, 4-tolyl, 4-ClC6H4, 4-MeOC6H4) were prepared in 22-93% yields by treating piperidinium dithiocarboxylates III with Ph2PCl. Reaction of II with N-chlorosuccinimide gave 7-19% N-(thioacylthio)succinimides IV.

ST sulfide thioacyl thiophosphinoyl selenophosphinoyl; phosphino thioacyl sulfide; thioacylation thioacyl sulfide

IT Acylation  
(thio-, thioacyl diphenylthiophosphinoyl and -selenophosphinoyl sulfides for)

IT 74-96-4 108-86-1, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(Grignard reaction of, with methylthiobenzoic diphenylthiophosphinic thioanhydride)

IT 603-35-0P, preparation  
RL: FORM (Formation, nonpreparative); PREP (Preparation)  
(formation of, from reaction of thioacyl diphenylphosphine sulfides with phenyllithium)

IT 5827-17-8P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and reaction of, with Me iodide)

IT 97270-46-7P 97270-47-8P 97270-48-9P 97270-49-0P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and reaction of, with chlorosuccinimide)

IT 55249-23-5P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and reaction of, with dithiobenzoates)

IT 97270-52-5P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and thioacylation by)

IT 1101-41-3P 1636-15-3P 3481-62-7P 5873-93-8P 5977-80-0P  
5977-87-7P 15288-70-7P 17534-85-9P 20199-06-8P 20710-49-0P  
20710-50-3P 20710-51-4P 20849-31-4P 21007-46-5P 26028-04-6P  
34736-44-2P 38194-90-0P 42967-62-4P 52322-79-9P 53724-35-9P  
53724-39-3P 53724-40-6P 54300-29-7P 60732-07-2P 63385-22-8P  
70869-19-1P 74670-37-4P 79253-84-2P 80031-12-5P 80031-13-6P  
80031-14-7P 80031-18-1P 97270-38-7P 97270-39-8P 97270-40-1P  
97270-41-2P 97270-42-3P 97270-43-4P 97270-44-5P 97270-45-6P  
97270-50-3P 97270-51-4P 97270-53-6P 97270-54-7P 97270-55-8P  
97270-57-0P 97270-58-1P 97270-59-2P 97270-60-5P 97270-61-6P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)

IT 39969-91-0 42967-76-0 42967-78-2 50684-41-8  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with chlorodiphenylphosphine)

IT 16940-66-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with di-Ph diselenide and ditelluride)

IT 5109-05-7 68340-47-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with di-Ph selenophosphinoyl chloride)

IT 7782-49-2, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with diphenylphosphinous chloride)

IT 53724-36-0 74670-56-7 74670-58-9 74670-60-3 97270-56-9  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with diphenylthiophosphinoyl chloride)

IT 1015-37-8  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with dithiobenzoates)

IT 62-53-3, reactions 106-49-0, reactions 108-91-8, reactions 109-72-8, reactions 109-89-7, reactions 110-89-4, reactions 122-39-4, reactions 124-41-4 139-02-6 141-52-6 591-51-5 865-47-4 917-54-4 930-69-8 23974-72-3 30383-01-8 41422-67-7  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with methylthiobenzoic diphenylthiophosphinic thioanhydride)

IT 1079-66-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with selenium)

IT 70-11-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with sodium methyldithiobenzoate)

IT 1666-13-3 32294-60-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with sodium tetrahydroborate)

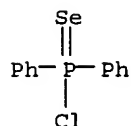
IT 128-09-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with thioacyl diphenylphosphinyl sulfide)

IT 1068-74-2 10026-07-0  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with thioacyl diphenylphosphinyl sulfide derivative)

IT 55249-23-5P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (preparation and reaction of, with dithiobenzoates)

RN 55249-23-5 HCAPLUS

CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



=> d all hitstr 122 tot

L22 ANSWER 1 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:959890 HCAPLUS

DN 142:74661

ED Entered STN: 11 Nov 2004

TI Enantioselective conjugate addition of dialkylzinc and diphenylzinc to enones catalyzed by a chiral copper(I) binaphthylthiophosphoramidate or binaphthylselenophosphoramidate ligand system

AU Shi, Min; Wang, Chun-Jiang; Zhang, Wen

CS State Key Laboratory of Organometallic Chemistry Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, Shanghai, 200032, Peop. Rep. China

SO Chemistry--A European Journal (2004), 10(21), 5507-5516

CODEN: CEUJED; ISSN: 0947-6539

PB Wiley-VCH Verlag GmbH & Co. KGaA

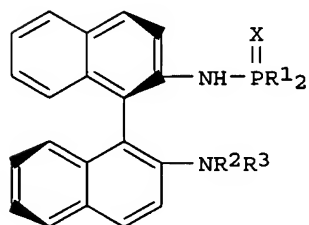
DT Journal

LA English

CC 29-7 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 24

GI



I



- AB Chiral bidentate N,S-ligands I were prepared and examined in copper-catalyzed asym. conjugate addition of dialkylzinc to  $\alpha,\beta$ -unsatd. ketones. Ligands I (1-7; L1-L7; X = S; 1, R1 = Me, R2 = R3 = H; 2, R1 = Me, R2 = H, R3 = Et; 3, R1 = Ph, R2 = R3 = H; 4, R1 = Ph, R2 = H, R3 = Et; 5, R1 = Ph, R2 = R3 = Me; 6, R1 = OEt, R2 = R3 = H; 7, R1 = OEt, R2 = H, R3 = Et) were prepared by lithiation of the corresponding 1,1'-binaphthyl-2,2'-diamine followed by phosphorylation by R12P(S)Cl. The asym. conjugate addition of R42Zn (R4 = Me, Et, Ph) dialkylzinc or diphenylzinc to 2-cyclohexenone, 2-cycloheptenone and 2-cyclopentenone was catalyzed by a copper(I) complex in the presence of L1-L7 at temperature 20° or 0°, affording the Michael adducts in high yields with excellent ee. Acyclic enones R5COCH:CHR6 (R5, R6 = aryl, alkyl) also gave excellent chemical yields and enantioselectivities in addition of Et2Zn. Ligand L9 (shown as I, X = Se, R1 = Ph, R2 = H, R3 = Et) showed analogous activity and enantioselectivity, being stable and recoverable, whereas L8 (X = O) was non-enantioselective. The mechanism of this asym. conjugate addition system is discussed. The presence of NH-proton of phosphoramidate in these chiral ligands play a significant role in the formation of the active species, since N-methylated analog L2 showed no enantioselectivity.
- ST binaphthyl bidentate chiral nitrogen sulfur ligand phosphorothioic amide prepn; thiophosphorylated selenophosphorylated binaphthalenediamine chiral bidentate ligand prepn; binaphthalenediamine thiophosphorylation selenophosphorylation bidentate chiral ligand diethylzinc conjugate addn; ketone unsatd conjugate addn diethylzinc thiophosphorylated binaphthalenediamine copper catalyst; Michael addn asym unsatd ketone thiophosphoryl binaphthalenediamine copper catalyst
- IT Asymmetric synthesis and induction catalysts  
(Michael addition; preparation of axial-chiral phosphorylated binaphthalenediamines as N,S- and N,Se- bidentate ligands for asym. Michael addition of dialkylzinc to unsatd. ketones)
- IT Ligands  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(chiral, axial-chiral; preparation of axial-chiral phosphorylated binaphthalenediamines as N,S- and N,Se- bidentate ligands for asym. Michael addition of dialkylzinc to unsatd. ketones)
- IT Addition reaction  
(conjugate, stereoselective; asym. Michael addition of dialkylzinc to  $\alpha,\beta$ -unsatd. ketones catalyzed by axial-chiral phosphorylated binaphthalenediamine-copper complexes)
- IT Amines, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(diamines, axial-chiral; preparation of axial-chiral phosphorylated binaphthalenediamines as N,S- and N,Se- bidentate ligands for asym. Michael addition of dialkylzinc to unsatd. ketones)
- IT Michael reaction catalysts  
(stereoselective; asym. Michael addition of dialkylzinc to  $\alpha,\beta$ -unsatd. ketones catalyzed by axial-chiral phosphorylated binaphthalenediamine-copper complexes)
- IT Phosphorylation  
(thiophosphorylation, selenophosphorylation; preparation of axial-chiral phosphorylated binaphthalenediamines as N,S- and N,Se- bidentate ligands for asym. Michael addition of dialkylzinc to unsatd. ketones)
- IT Ketones, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
( $\alpha,\beta$ -unsatd.; asym. Michael addition of dialkylzinc to  $\alpha,\beta$ -unsatd. ketones catalyzed by axial-chiral phosphorylated binaphthalenediamine-copper complexes)
- IT 993-12-4 1015-37-8 1499-21-4 2524-04-1 55249-23-5  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(amination; preparation of axial-chiral phosphorylated binaphthalenediamines as N,S- and N,Se- bidentate ligands for asym. Michael addition of dialkylzinc to unsatd. ketones)
- IT 94-41-7 544-97-8, Dimethylzinc 930-30-3, 2-Cyclopentenone 930-68-7, 2-Cyclohexenone 959-23-9 959-33-1 1078-58-6, Diphenylzinc

1121-66-0, 2-Cycloheptenone 1669-44-9, 3-Octen-2-one 1774-66-9  
 2403-27-2 5166-53-0 6333-08-0 52094-89-0 812647-79-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (asym. conjugate addition; preparation of axial-chiral phosphorylated  
 binaphthalenediamines as N,S- and N,Se- bidentate ligands for asym.  
 Michael addition of dialkylzinc to unsatd. ketones)

IT 18741-85-0 93713-30-5 444759-10-8 587838-62-8  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (phosphorylation; preparation of axial-chiral phosphorylated  
 binaphthalenediamines as N,S- and N,Se- bidentate ligands for asym.  
 Michael addition of dialkylzinc to unsatd. ketones)

IT 14057-91-1 15418-29-8 34946-82-2 42152-46-5  
 RL: CAT (Catalyst use); USES (Uses)  
 (preparation of axial-chiral phosphorylated binaphthalenediamines as N,S-  
 and N,Se- bidentate ligands for asym. Michael addition of dialkylzinc to  
 unsatd. ketones)

IT 272116-80-0P 587838-64-0P 587838-66-2P 587838-70-8P 587838-73-1P  
 587838-75-3P 587838-77-5P 587838-79-7P 813420-40-5P 813420-46-1P  
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
 USES (Uses)  
 (preparation of axial-chiral phosphorylated binaphthalenediamines as N,S-  
 and N,Se- bidentate ligands for asym. Michael addition of dialkylzinc to  
 unsatd. ketones)

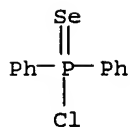
IT 6137-10-6P 13368-65-5P 16460-86-9P 34993-51-6P 40238-09-3P  
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 123559-92-2P 142809-75-4P 203312-05-4P 812647-76-0P 812647-77-1P  
 812647-78-2P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of axial-chiral phosphorylated binaphthalenediamines as N,S-  
 and N,Se- bidentate ligands for asym. Michael addition of dialkylzinc to  
 unsatd. ketones)

RE.CNT 94 THERE ARE 94 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE

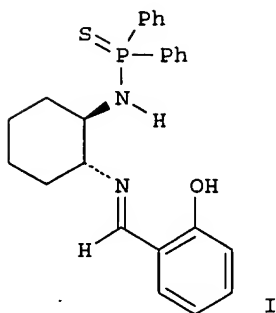
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- IT 55249-23-5  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (amination; preparation of axial-chiral phosphorylated binaphthalenediamines  
 as N,S- and N,Se- bidentate ligands for asym. Michael addition of

dialkylzinc to unsatd. ketones)  
 RN 55249-23-5 HCAPLUS  
 CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L22 ANSWER 2 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2003:1001947 HCAPLUS  
 DN 140:235457  
 ED Entered STN: 24 Dec 2003  
 TI Asymmetric 1,4-addition of diethylzinc to  $\alpha,\beta$ -unsaturated enones catalyzed by chiral imino-thiophosphoramidate ligands and copper(I)  
 AU Shi, Min; Zhang, Wen  
 CS Shanghai Institute of Organic Chemistry, State Key Laboratory of Organometallic Chemistry, Chinese Academy of Science, Shanghai, 200032, Peop. Rep. China  
 SO Tetrahedron: Asymmetry (2004), 15(1), 167-176  
 CODEN: TASYE3; ISSN: 0957-4166  
 PB Elsevier Science B.V.  
 DT Journal  
 LA English  
 CC 25-15 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
 Section cross-reference(s): 24  
 GI



AB In the presence of a catalytic amount of chiral imino-thiophosphoramidate ligand I and Cu(I) salt, the asym. addition of diethylzinc to  $\alpha,\beta$ -unsatd. carbonyl compds. could be achieved in good yields with moderate enantiomeric excess. A chiral imino-thiophosphoramidate ligand system for this asym. 1,4-addition reaction has been explored.  
 ST cycloalkenone ethylzinc conjugate addn; ethylcycloalkanone asym prepn; copper conjugate addn catalyst; imino thiophosphoramidate conjugate addn ligand  
 IT Addition reaction  
 (1,4-addition reaction, stereoselective; stereoselective preparation of ethylcycloalkanones and diphenylpentanone via copper-catalyzed asym. conjugate addition of diethylzinc to  $\alpha,\beta$ -unsatd. enones)  
 IT Aldehydes, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (aromatic; stereoselective preparation and ligand use of imino-thiophosphoramides via imination of chiral

- aminocyclohexylthiophosphoramides with arylaldehydes)
- IT Imination  
(stereoselective preparation and ligand use of imino-thiophosphoramides via imination of chiral aminocyclohexylthiophosphoramides with arylaldehydes)
- IT Imines  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(stereoselective preparation and ligand use of imino-thiophosphoramides via imination of chiral aminocyclohexylthiophosphoramides with arylaldehydes)
- IT Asymmetric synthesis and induction  
(stereoselective preparation of ethylcycloalkanones and diphenylpentanone via copper-catalyzed asym. conjugate addition of diethylzinc to  $\alpha,\beta$ -unsatd. enones)
- IT Ketones, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(unsatd.; stereoselective preparation of ethylcycloalkanones and diphenylpentanone via copper-catalyzed asym. conjugate addition of diethylzinc to  $\alpha,\beta$ -unsatd. enones)
- IT 666702-49-4P 666702-55-2P  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(stereoselective preparation and ligand use of imino-phosphoramide and -selenophosphoramide via phosphorylation of chiral cyclohexanediamine with phosphinic and selenophosphinic chlorides followed by imination with hydroxybenzaldehyde)
- IT 1499-21-4, Diphenylphosphinic chloride 20439-47-8 55249-23-5, Diphenylselenophosphinic chloride  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(stereoselective preparation and ligand use of imino-phosphoramide and -selenophosphoramide via phosphorylation of chiral cyclohexanediamine with phosphinic and selenophosphinic chlorides followed by imination with hydroxybenzaldehyde)
- IT 666701-93-5P 666701-97-9P 666702-01-8P 666702-06-3P 666702-10-9P  
666702-14-3P 666702-18-7P 666702-21-2P 666702-25-6P 666702-30-3P  
666702-34-7P 666702-39-2P 666702-44-9P  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(stereoselective preparation and ligand use of imino-thiophosphoramides via imination of chiral aminocyclohexylthiophosphoramides with arylaldehydes)
- IT 66-77-3, 1-Naphthalenecarboxaldehyde 83-38-5, 2,6-Dichlorobenzaldehyde 90-02-8, 2-Hydroxybenzaldehyde, reactions 90-60-8, 3,5-Dichloro-2-hydroxybenzaldehyde 98-01-1, 2-Furancarboxaldehyde, reactions 100-52-7, Benzaldehyde, reactions 708-06-5, 2-Hydroxy-1-naphthalenecarboxaldehyde 1121-60-4, 2-Pyridinecarboxaldehyde 1761-61-1, 5-Bromo-2-hydroxybenzaldehyde 2725-53-3, 5-tert-Butyl-2-hydroxybenzaldehyde 6334-18-5, 2,3-Dichlorobenzaldehyde 37942-07-7, 3,5-Di-tert-butyl-2-hydroxybenzaldehyde 643009-78-3 666701-89-9  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(stereoselective preparation and ligand use of imino-thiophosphoramides via imination of chiral aminocyclohexylthiophosphoramides with arylaldehydes)
- IT 14057-91-1, Tetrakis(acetonitrile)copper(I) perchlorate  
RL: CAT (Catalyst use); USES (Uses)  
(stereoselective preparation of ethylcycloalkanones and diphenylpentanone via copper-catalyzed asym. conjugate addition of diethylzinc to  $\alpha,\beta$ -unsatd. enones)
- IT 94-41-7, 1,3-Diphenylpropenone 557-20-0, Diethylzinc 930-30-3, 2-Cyclopentenone 930-68-7, 2-Cyclohexenone 1121-66-0, 2-Cycloheptenone  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(stereoselective preparation of ethylcycloalkanones and diphenylpentanone via copper-catalyzed asym. conjugate addition of diethylzinc to  $\alpha,\beta$ -unsatd. enones)
- IT 16460-86-9P, (S)-1,3-Diphenyl-1-pentanone 74006-73-8P, (S)-3-Ethylcyclohexanone 74006-74-9P 86505-49-9P 201727-84-6P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(stereoselective preparation of ethylcycloalkanones and diphenylpentanone  
via copper-catalyzed asym. conjugate addition of diethylzinc to  
 $\alpha,\beta$ -unsatd. enones)

RE.CNT 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

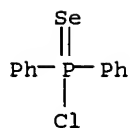
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IT 55249-23-5, Diphenylselenophosphinic chloride

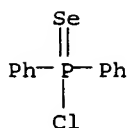
RL: RCT (Reactant); RACT (Reactant or reagent)  
(stereoselective preparation and ligand use of imino-phosphoramidate and  
-selenophosphoramidate via phosphorylation of chiral cyclohexanediamine  
with phosphinic and selenophosphinic chlorides followed by imination  
with hydroxybenzaldehyde)

RN 55249-23-5 HCAPLUS

CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L22 ANSWER 3 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2002:98307 HCAPLUS  
 DN 136:349574  
 ED Entered STN: 06 Feb 2002  
 TI NQR spectroscopy of chloranhydrides of pentavalent phosphorus oxo-, thio-, and seleno-acids  
 AU Semin, G. K.; Tsvetkov, E. N.; Bryukhova, E. V.  
 CS Inst. Elementoorg. Soedinenii im. A. N. Nesmeyanova, Ross. Akad. Nauk, Moscow, Russia  
 SO Zhurnal Fizicheskoi Khimii (2001), 75(11), 1978-1982  
 CODEN: ZFKHA9; ISSN: 0044-4537  
 PB MAIK Nauka  
 DT Journal  
 LA Russian  
 CC 77-7 (Magnetic Phenomena)  
 AB Correlation equations was used to estimate the NQR frequency of the Cl atom bonded to the 4-coordinated P atom in compds. R1R2EPCL (E = O, S, Se) and [R1R2PCl2+]M-. The frequency increases in the series: P(O)Cl ≈ RO(S)PCl > P(S)Cl > P(Se)Cl ≥ PCl(ion). The Cl atom polarization affects the reactivity of the compds.  
 ST chlorine 35 NQR chloroanhydride phosphorus oxo thio seleno acid  
 IT Reactivity (chemical)  
 (chlorine-35 NQR of)  
 IT NQR (nuclear quadrupole resonance)  
 (chlorine-35; of chloranhydrides of pentavalent phosphorus oxo-, thio-, and seleno-acids)  
 IT 13981-72-1, Chlorine-35, properties  
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)  
 (NQR spectroscopy of chloranhydrides of pentavalent phosphorus oxo-, thio-, and seleno-acids)  
 IT 75-78-5 75-79-6 75-94-5 80-10-4 98-13-5 115-21-9 141-57-1  
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 814-49-3 824-72-6 993-12-4 993-43-1 1015-37-8 1066-50-8  
 1111-92-8 1112-15-8 1112-37-4 1113-11-7 1438-74-0 1498-46-0  
 1498-51-7 1498-64-2 1499-21-4 1558-25-4 1719-53-5 1825-82-7  
 1825-83-8 1825-97-4 1983-26-2 2171-82-6 2302-80-9 2524-04-1  
 2524-06-3 2524-18-7 2574-25-6 3064-55-9 3449-28-3 3982-89-6  
 3982-91-0, Phosphorothioic trichloride 4170-46-1 4518-94-9 4525-44-4  
 4652-19-1 4672-45-1 4707-95-3 4708-04-7 6395-52-4 6588-22-3  
 7521-80-4 7751-38-4 10025-87-3, Phosphoric trichloride 10026-04-7  
 10026-13-8 10173-43-0 13213-38-2 13213-39-3 14705-46-5  
 17566-84-6 17613-59-1 18171-74-9 18395-90-9 18544-45-1  
 22585-81-5 23834-60-8 37632-18-1 37632-19-2 39078-30-3  
 53772-64-8 55249-21-3 55249-22-4 55249-23-5 58452-58-7  
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 76076-84-1 76076-85-2 77780-72-4 95036-78-5 245095-06-1  
 RL: PRP (Properties)  
 (chlorine-35 NQR of)  
 IT 55249-23-5  
 RL: PRP (Properties)  
 (chlorine-35 NQR of)  
 RN 55249-23-5 HCAPLUS  
 CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L22 ANSWER 4 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2001:746876 HCAPLUS  
 DN 136:95001  
 ED Entered STN: 12 Oct 2001  
 TI New mixed-donor unsymmetrical P-N-P ligands and their palladium(II) complexes  
 AU Necas, Marek; Foreman, Mark R. St J.; Marek, Jaromir; Derek Woollins, J.; Novosad, Josef  
 CS Department of Inorganic Chemistry, Faculty of Science, Masaryk University, Brno, 611 37, Czech Rep.  
 SO New Journal of Chemistry (2001), 25(10), 1256-1263  
 CODEN: NJCHE5; ISSN: 1144-0546  
 PB Royal Society of Chemistry  
 DT Journal  
 LA English  
 CC 78-7 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 29, 75  
 OS CASREACT 136:95001  
 AB Unsym. bidentate ligands R2P(E)-N(H)-P(E')R2' [R, R' = Ph, OPh, iPr; E, E' = O, S, Se] were synthesized using the condensation reaction of an amino compound, R2P(E)NH2 [R = PhO, Ph; E = O, S, Se], with a P electrophile, R2'P(E')Cl [R' = iPr, Ph, OPh; E' = O, S, Se]. Deprotonated ligands (with KOTBu) can be treated with Pd(OAc)2 to give [Ph2P(S)-N-P(O)(OPh)2]2Pd, [iPr2P(S)-N-P(O)(OPh)2]2Pd and [Ph2P(S)-N-P(S)(OPh)2]2Pd, which show either four-membered or six-membered chelate rings. The new compds. were studied spectroscopically (NMR, IR and Raman) and by x-ray crystallog.  
 ST crystal structure unsym imino chalcogenophosphinate chalcogenophosphonate palladium complex; phosphoryliminophosphinate unsym prepn chelation palladium; palladium imido chalcogenophosphinate chalcogenophosphonate prepn crystal structure  
 IT Crystal structure  
 Molecular structure  
 (of mixed-donor unsym. imino(chalcogenophosphinate)chalcogenophosphonate ligands and their palladium complexes)  
 IT Chelation  
 (of mixed-donor unsym. imino(chalcogenophosphinate)chalcogenophosphonate ligands with palladium(II))  
 IT 98-88-4, Benzoyl chloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (condensation with thiophosphoramidate)  
 IT 90430-78-7  
 RL: PRP (Properties)  
 (crystal structure of)  
 IT 1015-37-8 1499-21-4 2015-56-7 19326-23-9 22077-44-7  
 55249-23-5 386705-17-5 386705-18-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (for preparation of unsym. imino(chalcogenophosphinate)chalcogenophosphonate)  
 IT 17366-80-2 23834-61-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (for preparation of unsym. imino(chalcogenophosphinate)chalcogenophosphonate or iminobis(thiophosphinate))  
 IT 386705-09-5P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation and complexation with palladium(II))  
 IT 13604-54-1P 244181-73-5P 244181-75-7P 386705-08-4P 386705-10-8P



386705-11-9P 386705-14-2P 386705-15-3P 386705-16-4P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and crystal structure of)

IT 386705-12-0P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)

IT 342774-17-8P 386705-07-3P  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (preparation, crystal structure, and complexation with palladium(II))

RE.CNT 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD

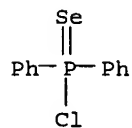
RE

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IT 55249-23-5  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (for preparation of unsym. imino(chalcogenophosphinate)chalcogenophosphonate  
 )

RN 55249-23-5 HCAPLUS

CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L22 ANSWER 5 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2001:487890 HCAPLUS

DN 135:282150

ED Entered STN: 06 Jul 2001

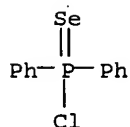
TI Improved synthesis of HN(SPPH<sub>2</sub>)(SePPh<sub>2</sub>) and some coordination chemistry of  
 [N(SPPH<sub>2</sub>)(SePPh<sub>2</sub>)]-

AU Sekar, P.; Ibers, J. A.

CS Department of Chemistry, Northwestern University, Evanston, IL,  
 60208-3113, USA

SO Inorganica Chimica Acta (2001), 319(1,2), 117-122  
 CODEN: ICHAA3; ISSN: 0020-1693  
 PB Elsevier Science S.A.  
 DT Journal  
 LA English  
 CC 78-7 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 75  
 OS CASREACT 135:282150  
 AB The compound HN(SPPPh<sub>2</sub>)(SePPh<sub>2</sub>) (1) was synthesized in good yield from the reaction of Ph<sub>2</sub>P(S)NH<sub>2</sub> with Ph<sub>2</sub>P(Se)Cl in the presence of NaH in THF. With the corresponding metal salts [N(SPPPh<sub>2</sub>)(SePPh<sub>2</sub>)]<sup>-</sup>, generated in situ from compound 1 in the presence of KOTBu, readily forms stable bis-chelate complexes [M{N(SPPPh<sub>2</sub>)(SePPh<sub>2</sub>)<sub>2</sub>}] (M = Co, 2; Zn, 3; Sn, 4) as well as the tris-chelate complex [Bi{N(SPPPh<sub>2</sub>)(SePPh<sub>2</sub>)<sub>3</sub>}] (5). These compds. were characterized by single-crystal x-ray diffraction and spectroscopic techniques. Compound 1 is isostructural with HN(SPPPh<sub>2</sub>)<sub>2</sub> and HN(SePPh<sub>2</sub>)<sub>2</sub> and shows S/Se disorder as do compds. 2-5 where the metal center is coordinated by two or three similar [N(SPPPh<sub>2</sub>)(SePPh<sub>2</sub>)]<sup>-</sup> anions. NMR data (δ ppm): 1, <sup>31</sup>P{<sup>1</sup>H}: 56.9, 52.5 (1JP-Se = 790 Hz); <sup>77</sup>Se{<sup>1</sup>H}: -160.2 (d, 1JSe-P = 790 Hz; 2JP-P = 4.6 Hz); 3, <sup>31</sup>P{<sup>1</sup>H}: 41.6, 28.2 (1JP-Se = 525 Hz); <sup>77</sup>Se{<sup>1</sup>H}: -113.1 (d, 1JSe-P = 524 Hz); 4, <sup>31</sup>P{<sup>1</sup>H}: 41.7, 28.4 (1JP-Se = 531 Hz); <sup>77</sup>Se{<sup>1</sup>H}: 14.6 (d, 1JSe-P = 521 Hz); 5, <sup>31</sup>P{<sup>1</sup>H}: 38.3, 24.4 (1JP-Se = 555 Hz); <sup>77</sup>Se{<sup>1</sup>H}: 27.0 (d, 1JSe-P = 559 Hz).  
 ST crystal structure thiophosphinylselenophosphinylamine cobalt zinc tin bismuth complex; thiophosphinylselenophosphinylamine cobalt zinc tin bismuth complex prepn structure  
 IT Crystal structure  
 Molecular structure  
 (of (diphenylthiophosphinyl)(diphenylselenophosphinyl)amine and its cobalt, zinc, tin and bismuth complexes)  
 IT 212072-40-7P, (Diphenylthiophosphinyl)(diphenylselenophosphinyl)amine  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (improved preparation and crystal and mol. structure and complexation)  
 IT 364079-95-8P 364079-96-9P 364079-99-2P 364080-00-2P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and crystal structure)  
 IT 364079-97-0P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and mol. structure)  
 IT 17366-80-2, Diphenylthiophosphinamide 55249-23-5, Diphenylselenophosphinic chloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactant for improved preparation of (diphenylthiophosphinyl)(diphenylselenophosphinyl)amine and its cobalt, zinc, tin and bismuth complexes)  
 IT 14126-40-0, Dichlorobis(triphenylphosphine)cobalt  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactant for preparation of cobalt (diphenylthiophosphinyl)(diphenylselenophosphinyl)aminato complex)  
 RE.CNT 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD  
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 IT 55249-23-5, Diphenylselenophosphinic chloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactant for improved preparation of (diphenylthiophosphinyl)(diphenylselenophosphinyl)amine and its cobalt, zinc, tin and bismuth complexes)  
 RN 55249-23-5 HCAPLUS  
 CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)

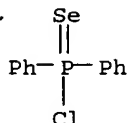


- L22 ANSWER 6 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2000:294000 HCAPLUS  
 DN 133:89055  
 ED Entered STN: 09 May 2000  
 TI An Unexpected Carbon Dioxide Insertion in the Reaction of  
 Trans-2,4-Disubstituted Azetidine, Trans-2,5-Disubstituted Pyrrolidine, or  
 Trans-2,6-Disubstituted Piperidine with Diphenylthiophosphinic Chloride  
 and Diphenylselenophosphinic Chloride  
 AU Shi, Min; Jiang, Jian-Kang; Shen, Yu-Mei; Feng, Yan-Shu; Lei, Gui-Xin  
 CS Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences,  
 Shanghai, 200032, Peop. Rep. China  
 SO Journal of Organic Chemistry (2000), 65(11), 3443-3448  
 CODEN: JOCEAH; ISSN: 0022-3263  
 PB American Chemical Society  
 DT Journal  
 LA English  
 CC 21-2 (General Organic Chemistry)  
 Section cross-reference(s): 27  
 OS CASREACT 133:89055  
 AB In the reaction of trans-2,4-disubstituted azetidine, trans-2,5-  
 disubstituted pyrrolidine, or trans-2,6-disubstituted piperidine with  
 diphenylthiophosphinic chloride or diphenylselenophosphinic chloride in  
 acetonitrile in the presence of potassium carbonate at room temperature, an  
 unexpected carbon dioxide insertion produced a carbamic

diphenylthiophosphinic or diphenylselenophosphinic anhydride in good yield. The same product could also be obtained when the reaction was carried out under a carbon dioxide atmospheric with potassium hydroxide or triethylamine as a base. This reaction process is related to the fixation of carbon dioxide without a metal catalyst.

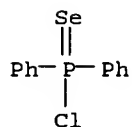
- ST carbon dioxide insertion reaction trans disubstituted azetidine; pyrrolidine trans disubstituted carbon dioxide insertion reaction; piperidine trans disubstituted carbon dioxide insertion reaction
- IT Insertion reaction  
(carbon dioxide insertion in reactions of trans-disubstituted azetidine, pyrrolidine, and piperidine with diphenylthio- or diphenylselenophosphinic chloride)
- IT Crystal structure  
Molecular structure  
(of 1-(diphenylthioxophosphinyl)- and 1-[[[diphenylthioxophosphinyl]oxy]carbonyl]-substituted di-Me trans-2,5-pyrrolidinedicarboxylates)
- IT 98-74-8, 4-Nitrobenzenesulfonyl chloride 98-88-4, Benzoyl chloride 121-44-8, reactions 1015-37-8, Diphenylthiophosphinic chloride 2577-48-2, L-Proline methyl ester 55249-23-5, Diphenylselenophosphinic chloride 105016-60-2 116836-62-5 116836-63-6 156720-59-1 282088-08-8 282088-15-7 282088-17-9  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(carbon dioxide insertion in reactions of trans-disubstituted azetidine, pyrrolidine, and piperidine with diphenylthio- or diphenylselenophosphinic chloride)
- IT 3096-09-1P 38938-22-6P 282088-10-2P 282088-11-3P 282088-13-5P 282088-14-6P 282088-16-8P 282088-18-0P 282088-19-1P 282088-20-4P 282088-21-5P 282088-22-6P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(carbon dioxide insertion in reactions of trans-disubstituted azetidine, pyrrolidine, and piperidine with diphenylthio- or diphenylselenophosphinic chloride)
- IT 282088-09-9P 282088-12-4P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation and crystal structure of, via carbon dioxide insertion in reaction of trans-disubstituted pyrrolidine with diphenylthiophosphinic chloride)
- RE.CNT 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD
- RE
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 IT 55249-23-5, Diphenylselenophosphinic chloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (carbon dioxide insertion in reactions of trans-disubstituted  
 azetidine, pyrrolidine, and piperidine with diphenylthio- or  
 diphenylselenophosphinic chloride)  
 RN 55249-23-5 HCAPLUS  
 CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L22 ANSWER 7 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2000:276458 HCAPLUS  
 DN 133:30796  
 ED Entered STN: 28 Apr 2000  
 TI NMR 77Se, 125Te, 31P and structure of seleno- and telluro-phosphorus  
 compounds  
 AU Il'Yasov, Akhat V.; Nuretdinov, Ildus A.  
 CS Arbuzov Institute of Organic and Physical Chemistry, Kazan, 420088, Russia  
 SO Phosphorus, Sulfur and Silicon and the Related Elements (1998),  
 136,137&138, 479-482  
 CODEN: PSSLEC; ISSN: 1042-6507  
 PB Gordon & Breach Science Publishers  
 DT Journal  
 LA English  
 CC 29-8 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 22  
 AB Spectra of a NMR of seleno- and telluro-P compds. on nuclei 77Se, 125Te,  
 31P are described. The dependencies of spectral parameters on the  
 structure of the substituents at the P atom in these compds. are  
 discussed.  
 ST substituent effect NMR seleno telluro phosphorus compd  
 IT Substituent effects  
 (of seleno- and tellurophosphorus compds. on NMR)  
 IT NMR (nuclear magnetic resonance)  
 (substituent effect of seleno- and tellurophosphorus compds. on)  
 IT 2935-46-8, Tributylphosphine telluride 3878-44-2, Triphenylphosphine  
 selenide 6395-52-4 14705-46-5, Dichloroethylphosphine selenide  
 21522-01-0, Triethylphosphine selenide 21992-95-0 39078-28-9,  
 Ethoxydiethylphosphine selenide 39078-29-0, Diethyl(ethylthio)phosphine  
 selenide 39078-30-3 50351-54-7, Diethylphenoxyphosphine selenide  
 53213-39-1, Difluoroethylphosphine selenide 55249-23-5  
 59085-25-5, Diethyl(methylamino)phosphine selenide 273937-54-5,  
 Dibromoethylphosphine selenide 273937-55-6 273937-56-7,  
 Dibutoxyethylphosphine telluride 273937-57-8, Diethyl(phenoxy)phosphine  
 telluride 273937-58-9, Diethyl(menthyloxy)phosphine telluride  
 RL: PRP (Properties)  
 (substituent effect of seleno- and tellurophosphorus compds. on NMR)  
 RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE  
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 Organic Compounds and Metal Complexes 1987, P453  
 IT 55249-23-5  
 RL: PRP (Properties)

(substituent effect of seleno- and tellurophosphorus compds. on NMR)  
 RN 55249-23-5 HCAPLUS  
 CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L22 ANSWER 8 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2000:228634 HCAPLUS  
 DN 133:17049  
 ED Entered STN: 09 Apr 2000  
 TI Chiral diphenylselenophosphoramides: a new class of chiral ligands for the titanium(IV) alkoxide-promoted addition of diethylzinc to aldehydes  
 AU Shi, Min; Sui, Wen-Sheng  
 CS Laboratory of Organometallic Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, Shanghai, 200032, Peop. Rep. China  
 SO Tetrahedron: Asymmetry (2000), 11(3), 835-841  
 CODEN: TASYE3; ISSN: 0957-4166  
 PB Elsevier Science Ltd.  
 DT Journal  
 LA English  
 CC 21-2 (General Organic Chemistry)  
 OS CASREACT 133:17049  
 AB Chiral C2-sym. diphenylselenophosphoramides were prepared from the reaction of diphenylselenophosphinic chloride with (1R,2R)-(-)-1,2-diaminocyclohexane and (1R,2R)-(+)-1,2-diphenylethylenediamine, resp., in high yields. Another novel chiral ligand was prepared from the reaction of diphenylselenophosphinic chloride with (R)-(+)-1,1'-binaphthyl-2,2'-diamine using butyllithium as the base. The ligands were used as catalytic chiral ligands in the titanium(IV) alkoxide-promoted enantioselective addition reaction of diethylzinc to aldehydes.  
 ST diphenylselenophosphoramide chiral diethylzinc addn aldehyde; selenophosphoramide chiral diethylzinc addn aldehyde  
 IT Addition reaction  
 Addition reaction catalysts  
 (stereoselective; titanium(IV) alkoxide-promoted addition of diethylzinc to aldehydes in presence of chiral diphenylselenophosphoramides)  
 IT Aldehydes, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (titanium(IV) alkoxide-promoted addition of diethylzinc to aldehydes in presence of chiral diphenylselenophosphoramides)  
 IT 546-68-9, Titanium(IV) isopropoxide  
 RL: CAT (Catalyst use); USES (Uses)  
 (titanium(IV) alkoxide-promoted addition of diethylzinc to aldehydes in presence of chiral diphenylselenophosphoramides)  
 IT 271767-20-5P 271767-21-6P 272116-81-1P  
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (titanium(IV) alkoxide-promoted addition of diethylzinc to aldehydes in presence of chiral diphenylselenophosphoramides)  
 IT 66-77-3, 1-Formylnaphthalene 100-52-7, Benzaldehyde, reactions 104-55-2, Cinnamaldehyde 104-87-0, 4-Methylbenzaldehyde 104-88-1, 4-Chlorobenzaldehyde, reactions 110-62-3, Pentanal 123-11-5, 4-Methoxybenzaldehyde, reactions 557-20-0, Diethylzinc 613-45-6, 2,4-Dimethoxybenzaldehyde 1700-37-4, 3-Benzyloxybenzaldehyde 18741-85-0, (R)-(+)-1,1'-Binaphthyl-2,2'-diamine 20439-47-8, (1R,2R)-(-)-1,2-Diaminocyclohexane 35132-20-8, (1R,2R)-(+)-1,2-Diphenylethylenediamine 55249-23-5  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (titanium(IV) alkoxide-promoted addition of diethylzinc to aldehydes in

presence of chiral diphenylselenophosphoramides)

IT 1565-74-8P 62701-49-9P 105836-14-4P 110611-21-7P 112777-65-8P  
114091-67-7P 130857-07-7P 253452-65-2P 253452-67-4P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(titanium(IV) alkoxide-promoted addition of diethylzinc to aldehydes in  
presence of chiral diphenylselenophosphoramides)

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD

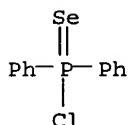
RE

- (1) Arai, Y; Chem Pharm Bull 1995, V43, P2243 HCAPLUS
- (2) Carreno, M; Tetrahedron: Asymmetry 1993, V4, P727 HCAPLUS
- (3) Hof, R; Tetrahedron: Asymmetry 1994, V5, P31 HCAPLUS
- (4) Kang, J; J Chem Soc Chem Commun 1994, P2009 HCAPLUS
- (5) Kang, J; Tetrahedron Lett 1995, V36, P4265 HCAPLUS
- (6) Kataoka, T; Chem Lett 1999, P257 HCAPLUS
- (7) Kataoka, T; J Chem Soc Chem Commun 1998, P197 HCAPLUS
- (8) Masaki, Y; Chem Pharm Bull 1996, V44, P454 HCAPLUS
- (9) Noyori, R; Angew Chem Int Ed Engl 1991, V30, P49
- (10) Rijnberg, E; Tetrahedron Lett 1994, V35, P6521 HCAPLUS
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- (12) Seebach, D; Helv Chim Acta 1992, V75, P2171 HCAPLUS
- (13) Shi, M; Tetrahedron: Asymmetry 1999, V10, P3319 HCAPLUS
- (14) Shi, M; Tetrahedron: Asymmetry 2000, V11, P773 HCAPLUS
- (15) Soai, K; Chem Rev 1992, V92, P833 HCAPLUS
- (16) Wirth, T; Tetrahedron Lett 1995, V36, P7849 HCAPLUS
- (17) Zhang, F; Tetrahedron: Asymmetry 1997, V8, P585 HCAPLUS

IT 55249-23-5  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(titanium(IV) alkoxide-promoted addition of diethylzinc to aldehydes in  
presence of chiral diphenylselenophosphoramides)

RN 55249-23-5 HCAPLUS

CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L22 ANSWER 9 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1984:22721 HCAPLUS

DN 100:22721

ED Entered STN: 12 May 1984

TI Selenium-77 and phosphorus-31 NMR spectra of organophosphoroselenium compounds

AU Enikeev, K. M.; Bayandina, E. V.; Ismaev, I. E.; Buina, N. A.; Il'yasov, A. V.; Nuretdinov, I. A.

CS Inst. Org. Fiz. Khim. im. Arbuzova, Kazan, USSR

SO Zhurnal Obshchei Khimii (1983), 53(9), 2143-4  
CODEN: ZOKHA4; ISSN: 0044-460X

DT Journal

LA Russian

CC 29-7 (Organometallic and Organometalloidal Compounds)  
Section cross-reference(s): 22

AB The 77Se and 31P NMR of (PhO)3-nPSeCln and Ph3-nPSeCln (n = 0-2) were studied.

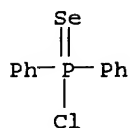
ST NMR phosphoroselenium compd; selenium phosphorus compd NMR

IT Nuclear magnetic resonance  
(of phosphorus-31 and selenium-77, in phosphoroselenium compds.)

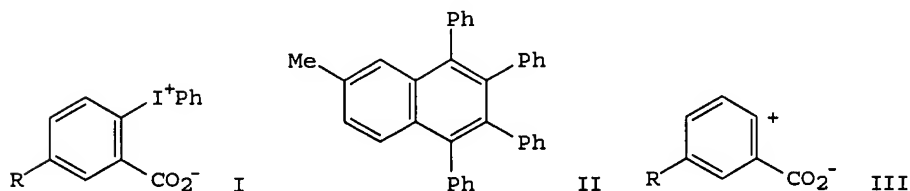
IT 14681-72-2, properties  
RL: PRP (Properties)  
(NMR of, in phosphoroselenium compds.)

IT 3878-44-2 7248-72-8 39078-30-3 39104-78-4 55249-23-5  
RL: PROC (Process)

(phosphorus-31 and selenium-77 NMR of)  
 IT 55249-23-5  
 RL: PROC (Process)  
 (phosphorus-31 and selenium-77 NMR of)  
 RN 55249-23-5 HCAPLUS  
 CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L22 ANSWER 10 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1980:57798 HCAPLUS  
 DN 92:57798  
 ED Entered STN: 12 May 1984  
 TI Reactions of diaryliodonio-2-carboxylate salts with organic halides of tellurium, selenium, and phosphorus  
 AU Bonilha, Joao Batista Sargi; Miola, Laerte; Toscano, Vicente G.  
 CS Fac. Filos., Univ. Sao Paulo, Sao Paulo, Brazil  
 SO Naturalia (Sao Jose do Rio Preto, Brazil) (1977), 3, 57-65  
 CODEN: NTRLDP; ISSN: 0101-1944  
 DT Journal  
 LA Portuguese  
 CC 22-3 (Physical Organic Chemistry)  
 OS CASREACT 92:57798  
 GI



AB Treatment of I (R = H) with R1TeCl3 (R1 = Ph, p-EtOC6H4, p-MeOC6H4) or TeCl4 in o-Cl2C6H4 1 h at 180-90° under argon gave 47.3-80.3% o-ClC6H4CO2H. Similarly I (R = Me) and TeCl4 gave 43% 2,5-ClMeC6H3CO2H. I (R = H) and Ph2P(Se)Cl or PhSeBr gave 50% o-ClC6H4CO2H or 30% o-BrC6H4CO2H, resp. I (R = Me) and tetracyclone in o-Cl2C6H4 at 180-90° did not give II. II was obtained in triglyme at 220° indicating the 4-methylbenzyne was not an intermediate in the nucleophilic substitution reaction. The nucleophilic displacement of the phenyliodonium group involves the formation of III as a reaction intermediate.  
 ST nucleophilic substitution aryliodonio benzoate tellurium chloride; phosphinoseleno chloride aryliodonio benzoate substitution; phenylselenium bromide aryliodonio benzoate substitution; selenium halide aryliodonio benzoate substitution; methylbenzyne tetracyclone cycloaddn; methyltetraphenyl naphthalene  
 IT Elimination reaction  
 (from o-phenyliodonium benzoates, mechanism of)  
 IT Substitution reaction, nucleophilic  
 (of o-phenyliodonium benzoate with tellurium, selenium, or phosphorus halide, mechanism of)

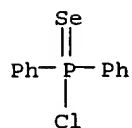


- IT 108-86-1, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(Grignard reaction of, with selenium)
- IT 118-92-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(Sandmeyer reaction of, o-iodobenzoic acid from)
- IT 13494-80-9, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(chlorination of, tellurium tetrachloride from)
- IT 479-33-4  
RL: PRP (Properties)  
(cycloaddn. reaction of, with methylbenzynes,  
methyl(tetraphenyl)naphthalene from)
- IT 2941-78-8  
RL: PRP (Properties)  
(diazotization and Sandmeyer reaction of)
- IT 1488-42-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(nucleophilic substitution reaction of, with tellurium, selenium, or  
phosphorus halide, mechanism of)
- IT 67461-96-5  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(nucleophilic substitution reaction of, with tellurium, selenium, or  
phosphorus halides, mechanism of)
- IT 55249-23-5  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(nucleophilic substitution reaction of, with o-phenyliodonobenzoate,  
mechanism of)
- IT 10026-07-0 29510-67-6 34837-55-3 36309-68-9 36310-31-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(nucleophilic substitution reaction of, with o-phenyliodonium benzoate,  
mechanism of)
- IT 1079-66-9  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(oxidation of, with selenium)
- IT 5849-21-8P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and cycloaddn. reaction of, with tetracyclone)
- IT 88-67-5P 645-96-5P 52548-14-8P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and oxidation of)
- IT 92-52-4P, reactions  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and reaction of, with bromine, phenylselenium bromide from)
- IT 21991-42-4P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)
- IT 7782-49-2, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with phenylmagnesium bromide, selenophenol from)
- IT 100-56-1  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with tellurium tetrachloride, phenyltellurium trichloride  
from)
- IT 622-62-8  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with tellurium tetrachloride, p-ethoxyphenyltellurium  
trichloride from)
- IT 100-66-3, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with tellurium tetrachloride, p-methoxyphenyltellurium  
trichloride from)
- IT 55249-23-5

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (nucleophilic substitution reaction of, with o-phenyliodonobenzoate,  
 mechanism of)

RN 55249-23-5 HCAPLUS

CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L22 ANSWER 11 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1978:507713 HCAPLUS

DN 89:107713

ED Entered STN: 12 May 1984

TI Dipole moments of a series of selenophosphoryl compounds

AU Shagidullin, R. R.; Vandyukova, I. I.; Nuretdinov, I. A.

CS Inst. Org. Fiz. Khim. im. Arbuzova, Kazan, USSR

SO Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1978), (6), 1407-9  
 CODEN: IASKA6; ISSN: 0002-3353

DT Journal

LA Russian

CC 22-8 (Physical Organic Chemistry)

AB A linear relation was found between the dipole moments of several  
 selenophosphoryl compds., e.g., MeP(Se)Cl<sub>2</sub>, (PrO)<sub>3</sub>PSe, EtP(Se)(NMe<sub>2</sub>)<sub>2</sub>, and  
 the sum of the substituent consts. of the groups attached to P. The  
 polarizability and coordination character of P:X bonds decreases in the  
 order X = Se > S > O.

ST selenophosphoryl compd dipole moment; LFER dipole moment selenophosphoryl

IT Linear free energy relationship  
 (for dipole moments of selenophosphoryl compds.)

IT Dipole moment  
 (of selenophosphoryl compds.)

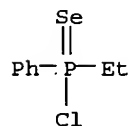
IT 152-19-2 2171-82-6 2651-89-0 3878-44-2 5853-64-5 6395-52-4  
 7322-77-2 7422-73-3 7441-05-6 14705-46-5 20180-11-4 21522-01-0  
 22230-88-2 23389-78-8 23486-86-4 30385-53-6 35400-21-6  
 35525-41-8 35525-42-9 39078-30-3 51072-23-2 55205-96-4  
 55249-23-5 67471-54-9

RL: PRP (Properties)  
 (dipole moment of)

IT 35400-21-6 55249-23-5  
 RL: PRP (Properties)  
 (dipole moment of)

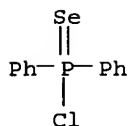
RN 35400-21-6 HCAPLUS

CN Phosphinoselenoic chloride, ethylphenyl- (9CI) (CA INDEX NAME)

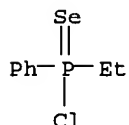


RN 55249-23-5 HCAPLUS

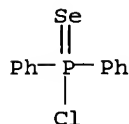
CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



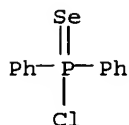
L22 ANSWER 12 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1978:442183 HCAPLUS  
 DN 89:42183  
 ED Entered STN: 12 May 1984  
 TI Electronic effects of substituents in phosphorus seleno acid chlorides  
 AU Nuretdinov, I. A.; Loginova, E. I.; Bayandina, E. V.  
 CS Inst. Org. Fiz. Khim. im. Arbuzova, Kazan, USSR  
 SO Zhurnal Obshchei Khimii (1978), 48(5), 1071-3  
 CODEN: ZOKHA4; ISSN: 0044-460X  
 DT Journal  
 LA Russian  
 CC 22-8 (Physical Organic Chemistry)  
 AB <sup>31</sup>P NMR chemical shifts, <sup>31</sup>P-<sup>77</sup>Se coupling consts. (J), and IR frequencies of the P:Se group in RP(Se)Cl<sub>2</sub> (R = Me, Et, Bu, Ph, p-ClC<sub>6</sub>H<sub>4</sub>, p-MeC<sub>6</sub>H<sub>4</sub>) and R<sub>1</sub>R<sub>2</sub>P(Se)Cl (R<sub>1</sub> = R<sub>2</sub> = Et, Bu, Ph; R<sub>1</sub> = Et, R<sub>2</sub> = Ph) were determined. Linear relations were found between J and Taft σ\* consts. and <sup>35</sup>Cl NQR frequencies. The contribution of the Cl atom to J was 350 Hz.  
 ST selenophosphorus chloride NMR IR; LFER NMR selenophosphorus chloride; substituent effect selenophosphorus chloride  
 IT Linear free energy relationship  
     (for NMR coupling consts. in selenophosphorus acid chlorides)  
 IT Substituent effect  
     (in selenophosphorus acid chlorides)  
 IT Nuclear magnetic resonance  
     (of phosphorus-31, in selenophosphorus acid chlorides)  
 IT Infrared spectra  
     (of selenophosphorus acid chlorides)  
 IT 2171-82-6 6395-52-4 14705-46-5 35400-21-6 39078-30-3  
     55249-21-3 55249-22-4 55249-23-5 67074-88-8 67074-89-9  
     RL: PRP (Properties)  
         (NMR and IR spectra of)  
 IT 35400-21-6 55249-23-5  
     RL: PRP (Properties)  
         (NMR and IR spectra of)  
 RN 35400-21-6 HCAPLUS  
 CN Phosphinoselenoic chloride, ethylphenyl- (9CI) (CA INDEX NAME)



RN 55249-23-5 HCAPLUS  
 CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)

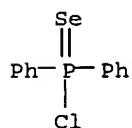


L22 ANSWER 13 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1976:180382 HCAPLUS  
 DN 84:180382  
 ED Entered STN: 12 May 1984  
 TI Organometallic complexes containing phosphorus(V) bonded to a transition metal: derivatives of dicarbonyl( $\eta$ -cyclopentadienyl)ferrate (1-)  
 AU Piraino, P.; Faraone, F.; Aversa, M. C.  
 CS Ist. Chim. Gen., Univ. Messina, Messina, Italy  
 SO Journal of the Chemical Society, Dalton Transactions: Inorganic Chemistry (1972-1999) (1976), (7), 610-13  
 CODEN: JCDTBI; ISSN: 0300-9246  
 DT Journal  
 LA English  
 CC 29-12 (Organometallic and Organometalloidal Compounds)  
 AB  $\text{FeL}(\text{CO})_2(\text{PR}_2\text{X})$  (I; X = S, R = Me; II, X = S, R = OEt; III, X = Se, R = Ph; L =  $\eta$ -cyclopentadienyl) were prepared by the reaction of  $\text{Na}[\text{FeL}(\text{CO})_2]$  with  $\text{PBrMe}_2\text{S}$ ,  $\text{PCl}(\text{OEt})_2\text{S}$ , or  $\text{PPh}_2\text{ClSe}$ , resp. The method is suitable for a wide series of carbonylmetallates. On the basis of ir and PMR data, I-III contain an Fe-P rather than an Fe-X bond. Reaction of  $\text{PPh}_3$  or  $\text{PMe}_2\text{Ph}$  with I-III gave only substitution products.  $[\text{FeL}(\text{CO})_2[\text{PR}_2(\text{XMe})]]^+$  were obtained by S- or Se-methylation using  $\text{MeI}$  or  $[\text{OMe}_3][\text{BF}_4]$  as reagents. EtI and  $[\text{OEt}_3][\text{BF}_4]$  react only with I.  
 ST selenoato phosphino complex iron; thiophosphato complex iron; iron phosphinothioato complex; carbonyl iron; cyclopentadiene complex iron  
 IT Carbonyls  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (iron)  
 IT 59634-29-6P 59634-30-9P 59634-31-0P 59634-33-2P 59634-35-4P  
 59634-37-6P 59634-39-8P 59634-40-1P 59634-41-2P 59634-42-3P  
 59634-43-4P 59689-96-2P 59689-97-3P 59689-98-4P 59689-99-5P  
 59690-00-5P 59690-01-6P 59690-02-7P 59690-03-8P 59714-38-4P  
 59733-21-0P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)  
 IT 2524-04-1 6839-93-6 55249-23-5  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with carbonylferrate complex)  
 IT 12152-20-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactions of, with phosphinothioic or-selenoic halides)  
 IT 55249-23-5  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with carbonylferrate complex)  
 RN 55249-23-5 HCAPLUS  
 CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



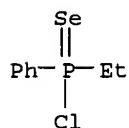
L22 ANSWER 14 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1975:139082 HCAPLUS  
 DN 82:139082  
 ED Entered STN: 12 May 1984  
 TI Nuclear quadrupole resonance study of electron effects in heteroorganic compounds. 4. Phosphorus selenic acid chlorides  
 AU Nuretdinov, I. A.; Osokin, D. Ya.; Safin, I. A.  
 CS Kazan. Fiz.-Tekh. Inst., Kazan, USSR  
 SO Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1975), (2), 327-30  
 CODEN: IASKA6; ISSN: 0002-3353  
 DT Journal

LA Russian  
 CC 22-8 (Physical Organic Chemistry)  
 AB NQR data for RR1P(X)Cl (R = Me, Et, Bu, Ph; R1 = Cl, Et, Bu, Ph; X = Se, S, O) indicate that the electron d. on the Cl atom is governed by an inductive effect from R and R1 and by a mesomeric effect from X.  
 ST NQR phosphorus selenic chloride; selenophosphorus chloride NQR  
 IT Nuclear quadrupole resonance  
     (of selenophosphorus chlorides)  
 IT Substituent effect  
     (on NQR of selenophosphorus chlorides)  
 IT 1015-37-8 2171-82-6 6395-52-4 6588-22-3 14705-46-5 23834-60-8  
 39078-30-3 55249-21-3 55249-22-4 55249-23-5  
 RL: PRP (Properties)  
     (NQR of chlorine-35 in)  
 IT 55249-23-5  
 RL: PRP (Properties)  
     (NQR of chlorine-35 in)  
 RN 55249-23-5 HCAPLUS  
 CN Phosphinoselenic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L22 ANSWER 15 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1974:418897 HCAPLUS  
 DN 81:18897  
 ED Entered STN: 12 May 1984  
 TI Spin-spin interaction between phosphorus-31-selenium-77 and phosphorus-31-tellurium-125 nuclei in compounds containing the .tplbond.P-X group, where X is oxygen, sulfur, selenium, or tellurium  
 AU Loginova, E. I.; Nuretdinov, I. A.; Petrov, Yu. A.  
 CS Kazan. Fiz.-Tekh. Inst., Kazan, USSR  
 SO Teoreticheskaya i Eksperimental'naya Khimiya (1974), 10(1), 75-81  
 CODEN: TEKHA4; ISSN: 0497-2627  
 DT Journal  
 LA Russian  
 CC 73-4 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)  
 AB The 31P NMR spectra (15.07 MHz) of organic compds., containing .tplbond.P → X groups (X = Se, Te, O), were investigated; the chemical shifts δ31P were measured with respect to 85% aqueous H3PO4. A central, most intense signal, corresponding to 31P nuclei, bonded to Se and Te nuclei, free of a magnetic moment, as well as 2 satellites, related to spin-spin couplings of 31P with 77Se and 125Te, were observed. The 1J31P-77Se spin-spin interaction constant value (789-1130 Hz) depended considerably on the nature of the P substituents. The 1K31P-77Se as well as 1K31P-125Te signs were neg.; the 1J31P-77Se and 1J31P-125Te signs were opposite. The degree of s-character of the σ-mol. bonding orbital was considerably sensitive to small changes of valence angles in the mol. The observed variations of the 1K31P-77Se spin-spin interaction constant values in Se:PZ2T were attributed to the spin d. changes caused by the change of the Z and T substituent nature. The Jameson-Gutowsky model (C. J. Jameson, H. S. Gutowsky, 1969) for the spin-spin interaction of nuclei immediately bonded predicts not only the sign but explains to a degree also the observed change of the 1K31P-77Se value.  
 ST nuclear spin phosphorus chalcogens; selenium phosphorus spin coupling; tellurium phosphorus spin coupling; NMR organophosphorus chalcogen compds  
 IT Nuclear magnetic resonance  
     (of phosphorus-31, in organophosphorus-chalcogen compds.)  
 IT Spin, nuclear coupling

(phosphorus-31-selenium-77 and phosphorus-31-tellurium-125)  
 IT 7441-05-6 14705-46-5 35060-67-4 35400-21-6 35525-41-8  
 39104-73-9 51461-98-4 52704-06-0 52704-07-1  
 RL: PRP (Properties)  
 (NMR of phosphorus in, chalcogen-phosphorus spin-spin coupling in)  
 IT 14681-72-2, properties  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (nuclear spin-spin coupling of, with phosphorus-31)  
 IT 14390-73-9, properties  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (nuclear spin-spin coupling of, with phosphorus-31 in organo phosphorus  
 compds.)  
 IT 7723-14-0, properties  
 RL: PRP (Properties)  
 (nuclear spin-spin interaction of, with selenium-77 and tellurium-125  
 in organo phosphorus compds. containing chalcogens)  
 IT 35400-21-6  
 RL: PRP (Properties)  
 (NMR of phosphorus in, chalcogen-phosphorus spin-spin coupling in)  
 RN 35400-21-6 HCAPLUS  
 CN Phosphinoselenoic chloride, ethylphenyl- (9CI) (CA INDEX NAME)



L22 ANSWER 16 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1972:92662 HCAPLUS  
 DN 76:92662  
 ED Entered STN: 12 May 1984  
 TI Phosphorus-31 and selenium-77 spin-spin interaction constants and  
 structure of chlorophosphine selenides  
 AU Nuretdinov, I. A.; Loginova, E. I.  
 CS Inst. Org. Fiz. Khim. im. Arbuzova, Kazan, USSR  
 SO Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1971), (10), 2360-1  
 CODEN: IASKA6; ISSN: 0002-3353  
 DT Journal  
 LA Russian  
 CC 73 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance,  
 and Other Optical Properties)  
 AB NMR spectra showed spin-spin interaction between  $^{31}\text{P}$  and  $^{77}\text{Se}$ ; the former  
 formed a triplet for compds. with the  $\text{P}(\text{Se})$  group in chlorides, amides and  
 esters. In  $\text{EtP}(\text{Se})\text{Cl}_2$ ,  $\text{JP-Se} = 920$  Hz, in  $\text{EtPhP}(\text{Se})\text{Cl}$  it is 840 Hz. The  
 value of  $J$  allowed structure determination in  $\text{P-Se}$  compds. when their  $^{31}\text{P}$  chemical  
 shifts were too close to each other for identification.  
 ST phosphorus selenium compd NMR; selenium phosphorus compd NMR; phosphine  
 selenide compd NMR  
 IT Spin, nuclear coupling  
 (-spin coupling, in chlorophosphine selenides)  
 IT Molecular structure-property relationship  
 (NMR, of chlorophosphine selenides)  
 IT Nuclear magnetic resonance  
 (of phosphorus-31, in chlorophosphine selenides)  
 IT 14705-46-5 35400-21-6  
 RL: PRP (Properties)  
 (nuclear spin-spin coupling in)  
 IT 7723-14-0, properties  
 RL: PRP (Properties)  
 (nuclear spin-spin coupling of phosphorus-31, with selenium-77 in  
 chlorophosphine selenides)  
 IT 14681-72-2, properties

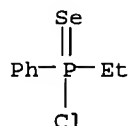
RL: RCT (Reactant); RACT (Reactant or reagent)  
(nuclear spin-spin coupling of, with phosphorus-31 in chlorophosphine selenides)

IT 35400-21-6

RL: PRP (Properties)  
(nuclear spin-spin coupling in)

RN 35400-21-6 HCAPLUS

CN Phosphinoselenoic chloride, ethylphenyl- (9CI) (CA INDEX NAME)



L22 ANSWER 17 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1963:24494 HCAPLUS

DN 58:24494

OREF 58:4063e-f

ED Entered STN: 22 Apr 2001

TI Passage effects for electron paramagnetic resonance (E.P.R.) lines with inhomogeneous broadening and with use of high-frequency modulation of the magnetic field

AU Bugai, A. A.

CS Inst. Semiconductors, Kiev

SO Fizika Tverdogo Tela (Sankt-Peterburg) (1962), 4, 3027-34

CODEN: FTVTAC; ISSN: 0367-3294

DT Journal

LA Unavailable

CC 10 (Spectra and Some Other Optical Properties)

AB A classical vector model is used to consider quant. the passage effects which take place during observation of E.P.R. (dispersion, in particular) of an inhomogeneously broadened line. The results agree with exptl. observed variations of the shape of dispersion signals of F centers in KCl on variation of the amplitude of modulation of the magnetic field and the amplitude of the magnetic component of the field in the resonator.

IT Color centers

(in potassium chloride, magnetic resonance absorption of F, passage effect in)

IT Magnetic resonance absorption

(passage effect in)

IT 7447-40-7, Potassium chloride

(color centers in, magnetic resonance absorption of F, passage effect in)

IT 1015-37-8, Phosphinothioic chloride, diphenyl- 55249-23-5,

Phosphinoselenoic chloride, diphenyl-

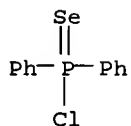
(spectrum of)

IT 55249-23-5, Phosphinoselenoic chloride, diphenyl-

(spectrum of)

RN 55249-23-5 HCAPLUS

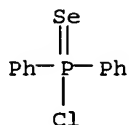
CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L22 ANSWER 18 OF 18 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1963:24493 HCAPLUS

DN 58:24493  
 OREF 58:4063d-e  
 ED Entered STN: 22 Apr 2001  
 TI Phosphine sulfides and selenides: the phosphorus-sulfur and phosphorus-selenium stretching frequencies  
 AU Zingaro, Ralph A.  
 CS Agr. and Mech. Coll. of Texas, College Station  
 SO Inorg. Chem. (1963), 2, 192-6  
 DT Journal  
 LA Unavailable  
 CC 10 (Spectra and Some Other Optical Properties)  
 AB The fundamental P:X stretching frequency, where X is a S or Se atom, was assigned in 15 phosphine sulfides and 13 phosphine selenides. The effect of coordination with halogen mols. on this vibration also was observed. A statistically significant correlation exists between the position of the P:S band and the nature of the substituents attached to the P atom.  
 IT Spectra, infrared  
     (of phosphine selenide and phosphine sulfide organic derivs.)  
 IT Force constants  
     (of phosphine selenides)  
 IT Iodine bromide, IBr, compound with tricyclohexylphosphine selenide (1:1)  
 Iodine compounds, with triphenylphosphine sulfide  
 Phosphine sulfide, triphenyl-, compound with ICl  
     (spectrum of)  
 IT 35280-73-0, Phosphine sulfide 35280-74-1, Phosphine selenide  
     (derivs., spectra of)  
 IT 7782-49-2, Selenium  
     (phosphorus-containing, spectra of)  
 IT 597-51-3, Phosphine sulfide, triethyl- 1015-37-8, Phosphinothioic chloride, diphenyl- 1017-98-7, Phosphine sulfide, ethyldiphenyl- 1707-00-2, Phosphine sulfide, dimethylphenyl- 2404-55-9, Phosphine sulfide, trimethyl- 3084-50-2, Phosphine sulfide, tributyl- 3878-44-2, Phosphine selenide, triphenyl- 3878-45-3, Phosphine sulfide, triphenyl- 5958-59-8, Phosphine sulfide, dibutylphenyl- 13639-72-0, Phosphine sulfide, tripropyl- 13639-74-2, Phosphine sulfide, methyldiphenyl- 14684-35-6, Phosphine sulfide, diethylphenyl- 15367-52-9, Phosphine sulfide, butyldiphenyl- 20819-54-9, Phosphine selenide, trimethyl- 21522-01-0, Phosphine selenide, triethyl- 23176-17-2, Phosphine selenide, methyldiphenyl- 27546-81-2, Phosphine selenide, ethyldiphenyl- 39181-22-1, Phosphine selenide, diethylphenyl- 39181-26-5, Phosphine selenide, tributyl- 42201-98-9, Phosphine sulfide, tricyclohexyl- 51072-21-0, Phosphine selenide, dimethylphenyl- 52784-98-2, Phosphine selenide, tricyclohexyl- 55249-23-5, Phosphinoselenoic chloride, diphenyl- 55344-99-5, Phosphine sulfide, triphenyl-, compound with I2 55345-02-3, Iodine chloride, ICl, compound with triphenylphosphine sulfide (1:1) 93457-66-0, Phosphine selenide, tripropyl- 97436-08-3, Phosphine selenide, tripropyl- 97832-59-2, Phosphine selenide, butyldiphenyl- 100146-20-1, Iodine bromide, IBr, compound with triphenylphosphine selenide (1:1) 100146-20-1, Phosphine selenide, triphenyl-, compound with IBr 101036-32-2, Phosphine selenide, tricyclohexyl-, compound with IBr  
     (spectrum of)  
 IT 55249-23-5, Phosphinoselenoic chloride, diphenyl-  
     (spectrum of)  
 RN 55249-23-5 HCAPLUS  
 CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)





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L21 ANSWER 1 OF 6 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1998:39369 HCAPLUS  
 DN 128:115182  
 ED Entered STN: 24 Jan 1998  
 TI New general synthesis of organophosphorus P-F compounds via reaction of  
 azolides of phosphorus acids with acyl fluorides: novel route to  
 2-deoxynucleosidyl phosphorofluoridates and phosphorodifluoridates.  
 [Erratum to document cited in CA121:205857]  
 AU Dabkowski, Wojciech; Michalski, Jan; Wasiake, Jacek; Cramer, Friedrich  
 CS Cent. Mol. Macromol. Stud., Pol. Acad. Sci., Lodz, 90-363, Pol.  
 SO Journal of the Chemical Society, Perkin Transactions 1: Organic and  
 Bio-Organic Chemistry (1997), (24), 3685  
 CODEN: JCPRB4; ISSN: 0300-922X  
 PB Royal Society of Chemistry  
 DT Journal  
 LA English  
 CC 33-9 (Carbohydrates)  
 AB A protocol concerning the preparation of 2'-deoxyadenosin-5'-yl thymidin-3'-yl  
 phosphorofluoridate 7b, omitted from the Exptl. part of the paper, is  
 presented.  
 ST erratum phosphorofluoridate deoxyribonucleoside; phosphorofluoridate  
 deoxyribonucleoside erratum; nucleoside deoxyribo phosphorofluoridate  
 phosphorodifluoridate erratum; phosphorodifluoridate deoxyribonucleoside  
 erratum; fluorophosphonate deoxyribonucleotide erratum; benzoyl fluoride  
 fluorination nucleotide phosphoroimidazolidate erratum  
 IT Fluorination  
 . (P-; of nucleotide phosphoroimidazolidate with benzoyl fluoride  
 (Erratum))  
 IT Nucleotides, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (phosphoroimidazolidates, P-fluorination of, with benzoyl fluoride  
 (Erratum))  
 IT 359-40-0, Oxalyl difluoride 455-32-3, Benzoyl fluoride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (P-fluorination of azolides with (Erratum))  
 IT 54877-59-7 158619-70-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (P-fluorination of, with acyl fluoride (Erratum))  
 IT 13567-99-2 16913-98-7 66778-06-1 71638-08-9 93403-77-1  
 99450-90-5 107313-21-3 114825-44-4 114825-45-5 157825-64-4  
 157825-65-5 157825-66-6 157825-67-7 157825-69-9 157825-70-2  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (P-fluorination of, with benzoyl fluoride (Erratum))  
 IT 157825-75-7  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (coupling of, with thymidine (Erratum))  
 IT 69075-29-2  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (coupling of, with thymidine phosphorodifluoridate (Erratum))  
 IT 157825-74-6P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation and P-oxidation of (Erratum))  
 IT 119093-14-0P 157825-71-3P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation and deblocking of (Erratum))  
 IT 143415-96-7P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation and phosphodiesterase hydrolysis of (Erratum))  
 IT 50-89-5P, Thymidine, preparation 958-09-8P 3802-85-5P 56888-24-5P  
 143415-97-8P 157825-72-4P 157825-73-5P  
 RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of (Erratum))

IT 358-74-7P 358-75-8P 403-65-6P 657-97-6P 676-99-3P 753-70-8P  
 753-72-0P 1135-98-4P 1648-39-1P 20472-53-1P 22382-13-4P  
 59319-65-2P 76628-09-6P 113680-13-0P 157825-68-8P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of, by P-fluorination of azolide with benzoyl fluoride  
 (Erratum))

IT 76054-81-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with phosphoryl triimidazolides (Erratum))

IT 13184-55-9 16062-77-4 73946-92-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with thymidine derivative (Erratum))

IT 9025-82-5, Phosphodiesterase  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (spleen and snake venom, hydrolysis of deoxynucleosidyl  
 phosphorofluoridates in presence of (Erratum))

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD

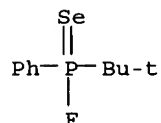
RE

(1) Dabkowski, W; J Chem Soc, Perkin Trans 1 1992, P1447 HCAPLUS  
 (2) Dabkowski, W; Methods in Molecular Biology 1993, V20, P245 HCAPLUS

IT 157825-68-8P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of, by P-fluorination of azolide with benzoyl fluoride  
 (Erratum))

RN 157825-68-8 HCAPLUS

CN Phosphinoselenoic fluoride, (1,1-dimethylethyl)phenyl- (9CI) (CA INDEX  
 NAME)



L21 ANSWER 2 OF 6 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1994:605857 HCAPLUS

DN 121:205857

ED Entered STN: 29 Oct 1994

TI New general synthesis of organophosphorus P-F compounds via reaction of  
 azolides of phosphorus acids with acyl fluorides: novel route to  
 2-deoxynucleosidyl phosphorofluoridates and phosphorodifluoridates

AU Dabkowski, Wojciech; Michalski, Jan; Wasiak, Jacek; Cramer, Friedrich

CS Cent. Mol. Macromol. Stud., Pol. Acad. Sci., Lodz, 90-363, Pol.

SO Journal of the Chemical Society, Perkin Transactions 1: Organic and  
 Bio-Organic Chemistry (1972-1999) (1994), (7), 817-20  
 CODEN: JCPRB4; ISSN: 0300-922X

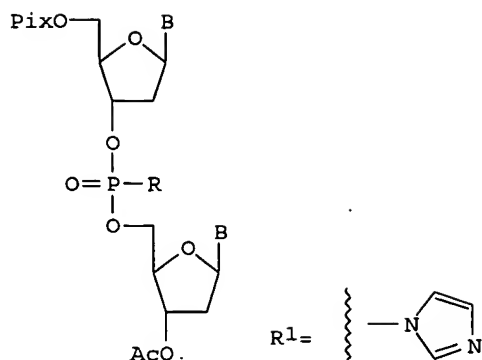
DT Journal

LA English

CC 33-9 (Carbohydrates)

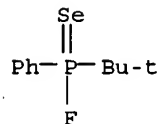
OS CASREACT 121:205857

GI



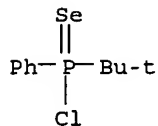
- AB Tetra- and tri-coordinate P-N-imidazole derivs. and their structural analogs, e.g. I (R = R<sup>1</sup>), react smoothly with acyl fluorides to give the corresponding P-F compds., e.g. I (R = F), in almost quant. yield. This method has been successfully applied to produce 2-deoxyribonucleosidyl phosphorofluoridates and phosphorodifluoridates.
- ST phosphorofluoridate deoxyribonucleoside; nucleoside deoxyribo phosphorofluoridate phosphorodifluoridate; phosphorodifluoridate deoxyribonucleoside; fluorophosphonate deoxyribonucleotide; benzoyl fluoride fluorination nucleotide phosphoroimidazolide
- IT Fluorination  
(P-, of nucleotide phosphoroimidazolide with benzoyl fluoride)
- IT Nucleotides, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(phosphoroimidazolides, P-fluorination of, with benzoyl fluoride)
- IT 359-40-0, Oxalyl difluoride 455-32-3, Benzoyl fluoride  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(P-fluorination of azolides with)
- IT 54877-59-7 158619-70-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(P-fluorination of, with acyl fluoride)
- IT 13567-99-2 16913-98-7 66778-06-1 71638-08-9 93403-77-1  
99450-90-5 107313-21-3 114825-44-4 114825-45-5 157825-64-4  
157825-65-5 157825-66-6 157825-67-7 157825-69-9 157825-70-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(P-fluorination of, with benzoyl fluoride)
- IT 157825-75-7  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling of, with thymidine)
- IT 69075-29-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(coupling of, with thymidine phosphorodifluoridate)
- IT 157825-74-6P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and P-oxidation of)
- IT 119093-14-0P 157825-71-3P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and deblocking of)
- IT 143415-96-7P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and phosphodiesterase hydrolysis of)
- IT 50-89-5P, Thymidine, preparation 958-09-8P 3802-85-5P 56888-24-5P  
143415-97-8P 157825-72-4P 157825-73-5P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)
- IT 358-74-7P 358-75-8P 403-65-6P 657-97-6P 676-99-3P 753-70-8P

753-72-0P 1135-98-4P 1648-39-1P 20472-53-1P 22382-13-4P  
 59319-65-2P 76628-09-6P 113680-13-0P 157825-68-8P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of, by P-fluorination of azolide with benzoyl fluoride)  
 IT 76054-81-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with phosphoryl triimidazolidines)  
 IT 13184-55-9 16062-77-4 73946-92-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with thymidine derivative)  
 IT 9025-82-5, Phosphodiesterase  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (spleen and snake venom, hydrolysis of deoxynucleosidyl  
 phosphorofluoridates in presence of)  
 IT 157825-68-8P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of, by P-fluorination of azolide with benzoyl fluoride)  
 RN 157825-68-8 HCAPLUS  
 CN Phosphinoselenoic fluoride, (1,1-dimethylethyl)phenyl- (9CI) (CA INDEX  
 NAME)

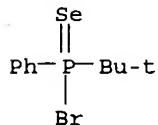


L21 ANSWER 3 OF 6 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1993:517339 HCAPLUS  
 DN 119:117339  
 ED Entered STN: 18 Sep 1993  
 TI Reaction of thio- and seleno esters of phosphorus acids with halogens.  
 Part 5. Halogenolysis of selenium-methyl phosphinoselenoates  
 AU Krawiecka, B.  
 CS Cent. Mol. Macromol. Stud., Pol. Acad. Sci., Lodz, 90-363, Pol.  
 SO Heteroatom Chemistry (1992), 3(4), 385-91  
 CODEN: HETCE8; ISSN: 1042-7163  
 DT Journal  
 LA English  
 CC 29-7 (Organometallic and Organometalloidal Compounds)  
 AB The reaction of the title phosphinoselenolates with sulfonyl chloride and  
 halogens was investigated stereochem. and spectroscopically (31P NMR at  
 variable temps.). Differences were observed in the reaction course when  
 compared to the behavior of sulfur analogs towards the same reagents. The  
 good donor character of the selenium atom and the leaving ability of the  
 Se+(R)X group explain well the results of the investigation.  
 ST phosphinoselenolate prepn halogenation stereochem  
 IT Stereochemistry  
 (of halogenation of phosphinoselenolates)  
 IT Halogenation  
 (of phosphinoselenolates, stereochem. of)  
 IT 677-74-7P 4923-85-7P 4923-86-8P 75213-01-3P 75213-02-4P  
 113502-21-9P 128014-09-5P 146879-96-1P 146879-98-3P 146880-00-4P  
 146880-01-5P 146880-02-6P 146880-03-7P 146880-04-8P  
 146880-05-9P 146880-07-1P 146880-08-2P 146880-09-3P  
 146880-10-6P 146880-12-8P 146880-13-9P 146880-15-1P  
 146880-16-2P 146880-18-4P 146880-20-8P 146880-21-9P 146880-23-1P  
 146880-25-3P 146880-27-5P 146880-29-7P 146880-30-0P 146880-31-1P  
 146880-33-3P 146880-35-5P 146880-37-7P 146880-38-8P 146880-39-9P  
 146880-40-2P 146880-41-3P 146880-42-4P 146880-43-5P 146880-45-7P  
 146894-86-2P 146894-88-4P 146894-89-5P 146913-58-8P 146925-63-5P  
 146925-65-7P 146925-66-8P 146925-68-0P 146925-69-1P 146985-64-0P  
 RL: PRP (Properties); FORM (Formation, nonpreparative); PREP

(Preparation)  
 (formation and NMR of)  
 IT 72315-74-3P 113502-18-4P 146879-91-6P 146879-92-7P 146879-93-8P  
 146879-94-9P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation and halogenation of, stereochem. of)  
 IT 6057-79-0 57956-51-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with benzeneselenenyl chloride)  
 IT 684-19-5  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (trimethylsilylation of)  
 IT 146880-01-5P 146880-10-6P  
 RL: PRP (Properties); FORM (Formation, nonpreparative); PREP  
 (Preparation)  
 (formation and NMR of)  
 RN 146880-01-5 HCAPLUS  
 CN Phosphinoselenoic chloride, (1,1-dimethylethyl)phenyl- (9CI) (CA INDEX  
 NAME)



RN 146880-10-6 HCAPLUS  
 CN Phosphinoselenoic bromide, (1,1-dimethylethyl)phenyl- (9CI) (CA INDEX  
 NAME)



L21 ANSWER 4 OF 6 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1979:432094 HCAPLUS  
 DN 91:32094  
 ED Entered STN: 12 May 1984  
 TI Dialkylphosphinic azides. II  
 AU Schroeder, Horst F.; Mueller, Joachim  
 CS Fachber. Chem., Philipps-Univ., Marburg, Fed. Rep. Ger.  
 SO Zeitschrift fuer Anorganische und Allgemeine Chemie (1979), 451, 158-74  
 CODEN: ZAACAB; ISSN: 0044-2313  
 DT Journal  
 LA German  
 CC 78-8 (Inorganic Chemicals and Reactions)  
 OS CASREACT 91:32094  
 AB R2PXN3 (X = O, S, Se; R = Ph, Et, Me, CD3) were prepared and characterized  
 by vibrational, NMR, and mass spectra. The spectra are discussed in  
 relation to the those of [Me2PS]2 and R2PXCl.  
 ST phosphinic azide; Raman phosphinic azide; IR phosphinic azide; NMR  
 phosphinic azide; mass spectra phosphinic azide; selenophosphinic azide;  
 thiophosphinic azide  
 IT Infrared spectra  
 Mass spectra  
 Nuclear magnetic resonance  
 Raman spectra  
 (of phosphinic azides)

IT 3676-97-9P 59012-39-4P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and NMR and vibrational spectra of)

IT 55249-23-5P 61509-77-1P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (preparation and NMR of)

IT 70442-86-3P 70629-41-3P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and mass and NMR spectra of)

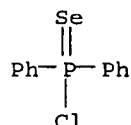
IT 4129-17-3P 4129-20-8P 70629-42-4P 70629-43-5P 70629-44-6P  
 70629-45-7P 70629-46-8P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and mass, NMR and vibrational spectra of)

IT 70629-47-9P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)

IT 55249-23-5P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (preparation and NMR of)

RN 55249-23-5 HCAPLUS

CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L21 ANSWER 5 OF 6 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1979:137923 HCAPLUS

DN 90:137923

ED Entered STN: 12 May 1984

TI Synthesis of arylselenophosphinic acid derivatives and their properties

AU Bayandina, E. V.; Nuretdinov, I. A.; Nurmukhamedova, L. V.

CS Inst. Org. Fiz. Khim. im. Arbuzova, Kazan, USSR

SO Zhurnal Obshchei Khimii (1978), 48(12), 2673-7

CODEN: ZOKHA4; ISSN: 0044-460X

DT Journal

LA Russian

CC 29-7 (Organometallic and Organometalloidal Compounds)

AB PhRP(Se)R<sub>2</sub> (R = Ph, Et; R<sub>1</sub> = OMe, OEt, OPr, OBu, OCH<sub>2</sub>CH:CH<sub>2</sub>, NMe<sub>2</sub>, NHPPh, SEt, Cl) were prepared in 62.7-95% yields. Thus, heating PhRP(Se)Cl with Se at .apprx.120° gave PhRP(Se)Cl, which on treatment with EtSH gave PhRP(Se)SEt.

ST selenophosphinic acid deriv; phosphinic acid seleno deriv

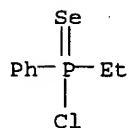
IT 35400-21-6P 55249-23-5P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (preparation and reactions of)

IT 20180-11-4P 23486-86-4P 39181-19-6P 65438-85-9P 69741-72-6P  
 69741-73-7P 69741-74-8P 69741-75-9P 69741-76-0P 69741-77-1P  
 69741-78-2P 69741-79-3P 69741-80-6P 69761-90-6P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)

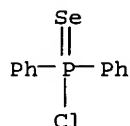
IT 1079-66-9 6840-01-3 15849-83-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with selenium)

IT 35400-21-6P 55249-23-5P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (preparation and reactions of)

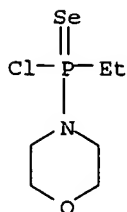
RN 35400-21-6 HCAPLUS  
 CN Phosphinoselenoic chloride, ethylphenyl- (9CI) (CA INDEX NAME)



RN 55249-23-5 HCAPLUS  
 CN Phosphinoselenoic chloride, diphenyl- (7CI, 9CI) (CA INDEX NAME)



L21 ANSWER 6 OF 6 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1969:512348 HCAPLUS  
 DN 71:112348  
 ED Entered STN: 12 May 1984  
 TI Amidoselenophosphorus acid monochlorides and their properties  
 AU Nuretdinov, I. A.; Grechkin, N. P.; Buina, N. A.; Nikonorova, L. K.  
 CS Inst. Org. Fiz. Khim. im. Arbuzova, Kazan, USSR  
 SO Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1969), (7), 1535-9  
 CODEN: IASKA6; ISSN: 0002-3353  
 DT Journal  
 LA Russian  
 CC 23 (Aliphatic Compounds)  
 AB Heating 23 g. (Et2N)2PCl with 8.63 g. powdered Se at 120° 10 min., then briefly to 130°, gave (Et2N)2PSeCl, b0.5 97°, d20 1.2558, n20D 1.5290. Similarly were prepared 64% (Me2N)2PSeCl, b0.1 69°, 1.4114, 1.5508; EtOP(Se)(NEt2)Cl, 71%, b0.1 70-1°, 1.3114, 1.5075; BuO analog, 68%, b0.08 74°, 1.2565, 1.5048; PhO analog, 63.6%, b0.1 123-5°, 1.3707, 1.5660; p-MeC6H4O analog, 64%, b0.07 121-2°, 1.3390, 1.5620, EtP(Se)RCl (R = morpholino), 73%, b0.2 117-18°, 1.5054, 1.5778; PhP(Se)(NEt2)Cl, m. 42°, 60%. Ir spectral curves were shown. The chlorides treated with ROH and Et3N gave the expected esters; iso-BuOP(Se)(OEt)NEt2, b0.1 74-5°, 1.1630, 1.4820; (Et2N)2P(Se)OCH2CH:CH2, b0.05 82-3°, 1.1619, 1.5102. Reacting the appropriate chloride with morpholine in C6H6 gave Et2NP(Se)(OPh)R (R = morpholino), m. 61-2°.  
 ST selenium phosphorus compds org; phosphorus selenium amides; amides phosphorus selenium  
 IT 25408-76-8P 25408-77-9P 25408-78-0P 25408-79-1P 25408-80-4P  
 25408-81-5P 25408-82-6P 25408-83-7P  
 RL: SPN (Synthetic preparation); PREP (Preparation) (preparation of)  
 IT 25408-82-6P  
 RL: SPN (Synthetic preparation); PREP (Preparation) (preparation of)  
 RN 25408-82-6 HCAPLUS  
 CN Phosphinoselenoic chloride, ethylmorpholino- (8CI) (CA INDEX NAME)



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 AN CA58:4063e CAOLD  
 TI pssage effects for electron paramagnetic resonance lines with inhomogeneous broadening and with use of high-frequency modulation of magnetic field  
 AU Bugai, A. A.  
 IT 597-51-3 1015-37-8 1017-98-7 1707-00-2 2404-55-9 3084-50-2  
 3878-44-2 5958-59-8 13639-72-0 13639-74-2 14684-35-6 15367-52-9  
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